JOURNAL OF
NURSING SCHOLARSHIP

VOLUME 49 ISSUE 2 MARCH 2017

CONTENTS

The Official Publication of the Honor Society of Nursing, Sigma Theta Tau International

WILEY Blackwell

JOURNAL OF NURSING SCHOLARSHIP

EDITORIAL

Duplicate Publication

One of the constant questions I am asked as an editor is, "What constitutes duplicate publication?" As a community we are very concerned about plagiarism, including self-plagiarism, and as authors we want to be careful about how we use our words in more than one venue. Editors at most journals now use software to easily ascertain the percentage of words in a submitted manuscript that have been published elsewhere. However, confusion remains about if and when an author can say the exact same thing in the exact same words over again. The only time this repetition is acceptable is when publishing a dissertation. You can use information from your dissertation in a manuscript even though the dissertation is available online (e.g., in electronic databases for dissertations such as Proquest). However, that is the only time that duplication is allowable.

The concept that an author relinquishes copyright when he or she submits to a peer-reviewed journal seems to be readily understood. Authors know that if something has been published in one journal it cannot be published in another (that constitutes plagiarism, as the first journal holds copyright). However, I constantly receive questions from authors who wish to repeat only a piece of a manuscript. For example, authors ask how to publish a second paper from a data set when the methods have been discussed elsewhere previously. I always tell the authors that they need to be careful about "salami slicing," that is, cutting data too thinly and publishing two articles when one would suffice.

If there really is reason for the second article to be written, the second article should have enough new and different information to warrant publication. For example, it might be necessary that information in the Methods section is discussed differently or that the author refers the reader to the first published article where a full discussion of the methods is available. Readers don't always appreciate having to go to another publication to get further information, but in these days of online publication, moving to another article is very efficient and doesn't require the work that actually finding the other article physically in a library entailed. In any event, it is not ethical to copy word for word from one publication to another.

I often find a duplication not only in the Methods section, but also in the Review of the Literature and Theoretical Framework sections. Sadly, this duplication is frequently a result of sloppy scholarship. Authors frequently paraphrase a theory, model, or summary of literature, but too often this paraphrasing is taken word for word from someone else's work. Please don't copy the work of others. Even if a theorist describes a theory in beautiful language that you can't hope to match, you can't steal someone else's words. You can only use a word-for-word replication inside quotation marks. Barring the use of quotes, you must put the basic premises of a theory or model in your own words.

"Yes, but," people will say to me, "I am very careful about not being involved in self-plagiarism and this work was never published in a peer-reviewed publication, but it has appeared on a website." In this day and age, if information is available electronically for others to read, we consider it published, and it cannot be used again in this same format for a different publication. It is important for emerging scientists to think about where they submit their work and what parts of their work are discoverable online. It is great to have your work available to the general public, but it is important to understand that once something is published online it cannot be published in the same format again (with the aforementioned exception of the dissertation).

"What about," I am also asked, "words that have to be used again and again?" Clearly, some content will be duplicated. I can't write a research paper without saying, "The purpose of this study is." Having a paper with 0% duplication is not the goal. So, as an editor there are certain phrases about institutional review board submission, for example, or other common research phrases that I expect to see from one paper to another. However, no editor expects whole sentences repeated, and certainly having an entire paragraph duplicated is unacceptable.

I have been asked, now that duplication software is more prevalent in universities, what is an acceptable amount of duplication. I have no single answer. Every manusiript that is going to be published in the Journal of Nursing Scholarship is put through our duplication software. I compare all duplication and look to see whether the duplication can be described as acceptable common phrases or if it appears that copyright is being violated. When the amount of duplication is high, I ask authors

to go back and rewrite sections and make sure that the words are their own. I hope that as more and more authors have access to duplication software we will look at our own work, avoid sloppy scholarship, and think of ways to provide necessary information without being repetitive, and that we will all benefit from this attention to detail.

Susan Gennaro
Editor

Journal of Nursing Scholarship, 2017; 49:2, 125–126.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Family Presence During Resuscitation: A Double-Edged Sword

Hadi Hassankhani, MSN, PhD[1], Vahid Zamanzadeh, MSN, PhD[2], Azad Rahmani, MSN, PhD[3], Hamidreza Haririan, MSN, PhD Candidate[4], & Joanne E. Porter, MSN, PhD[5]

1 Associate Professor of Nursing, Centre of Qualitative Studies, Tabriz University of Medical Sciences, Iran
2 Professor of Nursing, Nursing and Midwifery School, Tabriz University of Medical Sciences, Iran
3 Assistant Professor of Nursing, Nursing and Midwifery School, Tabriz University of Medical Sciences, Iran
4 Doctoral Candidate in Nursing, Nursing and Midwifery School, Tabriz University of Medical Sciences, Iran
5 Senior Lecturer in Nursing, School of Nursing, Midwifery and Healthcare, Federation University, Churchill, Victoria, Australia

Key words
Cardiopulmonary resuscitation, family presence, lived experience

Correspondence
Hamidreza Haririan, School of Nursing and Midwifery, end of Shariaty Street, Tabriz, Iran.
E-mail: houman.haririan@gmail.com

Accepted November 3, 2016

doi: 10.1111/jnu.12273

Abstract

Purpose: To illuminate the meaning of the lived experiences of resuscitation team members with the presence of the patient's family during resuscitation in the cultural context of Iran.
Design: An interpretative phenomenology was used to discover the lived experiences of the nurses and physicians of Tabriz hospitals, Iran, with family presence during resuscitation (FPDR). A total of 12 nurses and 9 physicians were interviewed over a 6-month period.
Methods: The interviews were audio recorded and semistructured, and were transcribed verbatim. Van Manen's technique was used for data analysis.
Findings: Two major themes and 10 subthemes emerged, including destructive presence (cessation of resuscitation, interference in resuscitation, disruption to the resuscitation team's focus, argument with the resuscitation team, and adverse mental image in the family) and supportive presence (trust in the resuscitation team, collaboration with the resuscitation team, alleviating the family's concern and settling their nerves, increasing the family's satisfaction, and reducing conflict with resuscitation team members).
Conclusions: Participants stated that FPDR may work as a double-edged sword for the family and resuscitation team, hurting or preserving quality. It is thus recommended that guidelines be created to protect patients' and families' rights, while considering the positive aspects of the phenomenon for hospitals.
Clinical Relevance: A liaison support person would act to decrease family anxiety levels and would be able to de-escalate any potentially aggressive or confrontational events during resuscitation. Well-trained and expert cardiopulmonary resuscitation team members do not have any stress in the presence of family during resuscitation. Resuscitation events tend to be prolonged when family members are allowed to be present.

In Iran the leading cause of death is a cardiovascular-related disease, in particular coronary artery disease (CAD). The highest risk that patients with CAD face is heart attack and its complication, namely cardiopulmonary arrest (Gharakhani, Naghsh Tabrizi, Emami, & Seif Rabiee, 2007).

Patient rights are one of the central defining standards in order to apply clinical governance (Parsapoor, Bagheri, & Larijani, 2010). The charter of Iran patient rights states that health services should be offered with the aim of securing the patient's peace in the final stage of life when disease is irreversible and the patient's death is imminent. Peace is defined as a reduction in pain and agony, and attention to the family's psychological, social, spiritual, and emotional needs when death draws near. At the time of their death, patients have the right to have someone

present in the last moments of their life (Parsapoor et al., 2010). In Iran's healthcare centers, it is traditional practice with patients presenting in cardiac arrest for family members to be taken outside of the resuscitation room. Family members are informed about the patient's situation periodically by a health professional (Soleimanpour et al., 2013). When patients' families stayed in the waiting room, they have reported feeling guilty, concerned that the patient died alone, and regretful for failing to bid the patient farewell (Demir, 2008). Survival following a resuscitation event in the United States remains low, with 9.5% surviving to discharge, compared with 7.2% in Iran (American Heart Association, 2013; Salari, Vanaki, & Ahmadi, 2010).

These final moments can be the last chance family members have to be with the patient. Today, one of the expectations that patients' families have from hospitals is to be with the patient, allowed at the bedside at the time of invasive procedures, even during cardiopulmonary resuscitation (CPR; Cepero, 2012; Mccabe, 2014; Salmond, Paplanus, & Avadhani, 2014; Walker, 2013; Ward, 2011; Westley, Ching, Sherman, & Smith, 2014,).

Family presence during resuscitation (FPDR) means the arrival of the patient's family members at the site where the resuscitation is undertaken, so that family members can see or have physical contact with the patient (Salmond et al., 2014; Vavarouta, Xanthos, Papadimitriou, Kouskouni, & Iacovidou, 2011). FPDR was introduced in the literature in the mid-1980s (Salmond et al., 2014, Badir & Sepit, 2007), and remains an important and controversial issue (Badir & Sepit, 2007; Gluck, 2014; Knott & Kee, 2005; McClement, Fallis, & Pereira, 2009; Wagner, 2004; Ward, 2011). It has been noted by a number of researchers that during active CPR, both the patient and family members experience what can be considered "a major crisis," with the patient fighting for life while the family waits for the outcome (McClement et al., 2009; Wagner, 2004). There are several reasons why medical personnel hesitate to allow FPDR, including different environmental, cultural, and social factors (Duran, Oman, Abel, Koziel, & Szymanski, 2007; Macy et al., 2006). Various issues, including the health professional's previous resuscitation experiences, ideas, beliefs, and environment, can affect how resuscitation team members implement FPDR (McClement et al., 2009; Twibell et al., 2008).

However, research indicates that there are a variety of opinions among healthcare personnel about FPDR, divided between those who support FPDR and those who do not (Cepero, 2012; Powers & Candela, 2016; Soleimanpour et al., 2013; Twibell et al., 2008). Exploring why there are pros and cons to letting Iranian families witness CPR was the impetus for the current research study. There remain few studies on the healthcare provider's experience of FPDR (Gluck, 2014). The current study was conducted with the aim of illuminating the meaning of lived experiences of resuscitation team members with FPDR within Iran's cultural context.

Table 1. Participants' Demographics

Nurses		Doctors	Range (*M*)
Age (years)			
27–35	7	1	Nurses: 27–53 (36.1)
36–43	4	6	Doctors: 30–46 (39.7)
44–51	—	2	
≥52	1	2	
Gender			
Male	8	8	
Female	4	1	
Department			
Emergency	5	3	
ICU/CCU	6	3	
Emergency and ICU/CCU	1	3	
Education			
Baccalaureate degree	10		
Master's degree	2		
General practitioner		3	
Emergency medicine resident		1	
Emergency medicine specialist		1	
Anesthetist		3	-
Cardiologist		1	-
Number of years in profession			
3–10	5	4	Nurses: 3–29 (12.5)
11–15	4	4	Doctors: 3–18 (11.6)
16–20	2	1	
21–30	1	—	
Total	12	9	

Note. CCU = cardiac care unit; ICU = intensive care unit.

Methods

An interpretative phenomenology was used to discover and explain the lived experiences of the participants: 12 nurses (N) and 9 doctors (D) employed in six hospitals in the city of Tabriz, Iran, participated in this study over 6 months (from June 2015 to November 2015; **Table 1**). Tabriz is one of the largest and most populated cities in Iran (1,549,453 persons), and it has many hospitals (approximately 24 hospitals). We chose the biggest and most crowded and referred hospitals of Tabriz, which has many resuscitation cases (minimum of one CPR per day), from different geographical areas of Tabriz city, and we also chose three public and three private hospitals. One public hospital is the Heart Center of Tabriz city, and the two other public hospitals are the most referred hospitals in northwest Iran. Doctors and nurses who were recruited for this study worked together on CPR teams. In these hospitals family members usually present at the

emergency department and can see resuscitation procedures. Purposive sampling was used, and the sample size was determined according to data saturation.

Inclusion criteria included a bachelor's degree or higher in nursing fields for the nurses, and a general medical degree or higher for doctors. Job tenure of at least 2 years in clinical activity and participation in resuscitation teams in the presence of patients' families were essential. There were no exclusion criteria based on age, gender, or ethnicity. Unstructured individual face-to-face interviews took place in emergency and intensive care wards at a time convenient to the participants. Interviews were performed in a quiet room in those wards and started with a greeting and querying participants' demographics and continued by open-ended question about participants' experiences. The interview questions included: what experience do you have with FPDR as a member of the resuscitation team, and what effect does FPDR have on your performance? The duration of the interviews varied from 15 to 40 min. The Tabriz Turkish language was used in the interviews, and a researcher verified its English translation by edition of a native. After the initial translation from Turkish to English by one of the authors, he sent this draft to a native English speaker in Australia, and she agreed to review and edit the manuscript.

Ethical approval was granted by the regional committee of medical research ethics at Tabriz University of Medical Science. Written consent was obtained from each participant prior to the interviews, which were digitally recorded and transcribed verbatim. To maintain the confidentiality of the participants, fictitious and numerical names were used to introduce participants in the research paper.

A hermeneutic phenomenological approach as described by van Manen (1990) was chosen for its ability to make interpretive sense of everyday lived experiences. Van Manen's method was used to provide structured guidance to assist in giving meaning to the phenomenon of family presence, and data analysis was performed applying the hermeneutic cycle that constitutes reading, reflective writing, and interpretation (Van Manen, 1990). The transcripts of each interview were read several times by two of the authors, and statements or expressions related to the phenomenon were selected and placed under the theme headings. In order to extract the main themes, similar data were integrated and the process of data reduction was undertaken.

The themes of this study reflect Van Manen's four lived world parameters, including lived time, lived space, lived relations, and lived body of participants (Van Manen, 1990; **Figure 1**). Human beings cannot be separated from their relationships in the world. Heidegger's notion of Dasein, or "being in the world," entails a relationship between being human and being in the world (Holloway & Wheeler, 2013). Researchers search for fundamental and general categories of human existence that illuminate experiences that disclose the world. Heideggerian thinking reflects on the fundamental structures that characterize the essential qualities of being in the world, such as the way in which the body occurs, the way the situations related to place and space occurs, the way the co-constituting of temporal structure occurs, and the way the quality of interpersonal relationships occurs (Holloway & Wheeler, 2013).

This is how Heideggerians show that the body, relations, time, and space reflect the qualities of human presence rather than being notions of quantitative measurement. However, in this study, themes such as collaboration and companionship with the resuscitation team reflect lived relations of participants, adverse mental images for the family reflect the lived body, cessation of resuscitation reflects lived time, and increasing the family's satisfaction reflects the lived space of participants.

The researcher utilized four criteria to ensure research rigor, including credibility, dependability, confirmability, and transferability according to Lincoln and Guba (Polit & Beck, 2012). Member checking together with an expert advisory panel including two nursing professors and three nursing PhD students constituted the external experts. The expert panel audited the data, thus increasing the reliability and confirmation of data. The lead author's rich description ensured the transferability of the data.

Results

Initially, 500 initial codes (the label of a meaning unit has been referred to as a code) in relation to the experiences of nurses and physicians were extracted. After analysis and review of the texts, the number of codes was reduced to 25 subheadings. Among these 25 subheadings, 10 key codes were selected as subthemes through aggregation of common points. Finally, immersing in the data and reflecting on the themes of this phenomenon, these 10 subthemes were reduced into 2 main themes. Destructive presence and supportive presence were the two main themes that emerged from the data, together with five subthemes for each main theme (**Table 2**).

Destructive Presence

According to the participants, FPDR has some destructive and detrimental effects on the members of the resuscitation team and the patient's family. Participants found that the presence of family members during

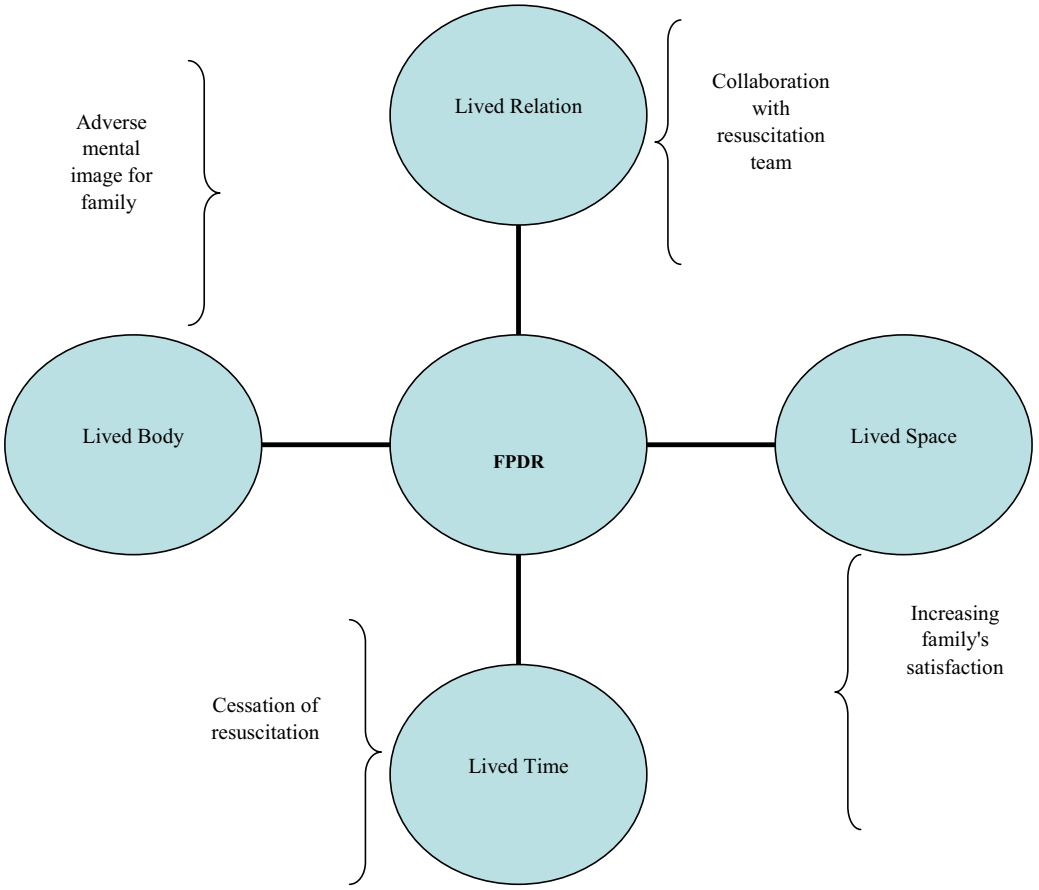

Figure 1. Van Manen's four lived world parameters of family presence during resuscitation.

Table 2. Main Themes and Subthemes of Resuscitation Team Experiences With Family Presence During Resuscitation

Main themes	Subthemes
Destructive presence	Cessation of resuscitation
	Interference in resuscitation
	Disruption to resuscitation team's focus
	Argument with resuscitation team
	An adverse mental image for family
Supportive presence	Trust in resuscitation team
	Collaboration with resuscitation team
	Alleviating family's concern
	Increasing family's satisfaction
	Reducing conflict with resuscitation team

resuscitation affected the incidence of medical interventions, stating that having families present was deemed cumbersome and may at times interfere in their work. A critical care nurse with over 10 years' experience stated, "... do not take this, take that, do not take this drug at first ... the attending doctor complained and said let us do our job" (N4). In another example, one participant explained, "When the patient got worse and I had to intubate, the daughter of the patient, who was a specialist, was so restless that she complained saying why did you put in a tube" (D3).

The patient's family was noted to prevent the team from performing resuscitation, asking the team to stop interventions and not allowing the team to go ahead, resulting in cessation of the resuscitation. One participant explained,

> Sometimes families become emotional and drop onto the body of the patient, one of our colleagues, who is a CCU nurse, when we resuscitated her father she did not get up from his body, not allowing us to perform resuscitation. (N4)

In another example, one participant spoke of an incident that occurred on the ward during a resuscitation event:

> We had a patient in the ward, she had respiratory arrest and her family stood next to him, they urged us not to perform intubation and tried to stop us, they

were even involved in a scuffle with guards, saying that you want to kill our mother. (N10)

During intubation of an endotracheal tube on a patient during a resuscitation event in an emergency department, a patient's family suddenly entered the room and took the tube from the resident and said I don't want to get my mother connected to the device and she'd be better dying this way. (N5)

A number of the participants stated that at times they lost their focus in the presence of the patient's family and said that they became nervous and anxious, resulting in a lack of focus on the job at hand. One participant thought that having family present affected the confidence levels of the resuscitation team members: "Presence of family in the room is cumbersome psychologically for beginners, because it occupies her or his mind in that God they are watching me, this would lessen her or his self-confidence, causing some delays in their work" (N8). Having family present can also increase the stress levels of the staff:

Despite patient's wife was herself an internal and experienced specialist, caused the resuscitation team such a great lot of stress that the doctor of the team got confused, ... we were under huge stress, we forgot to put gel on the paddles during shock procedure. (N9)

A resuscitation event can heighten emotions and at times this can lead to a display of aggressive behavior by some of the families present, which will in turn affect the resuscitation team's ability to continue performing the required tasks. One participant stated that "they [family] were seen to drop themselves onto the patient's body and put up a fight with personnel" (N4). Aggressive family behavior is often directed towards the resuscitation team members:

I do not feel safe, sometimes a brawl is sparked, I myself was beaten two times during resuscitation, after resuscitation there was a patient who died and his family who was a female collapsed and I said have her legs lifted up ... all of a sudden another family who was a male gave me a punch and said it is none of my business, if you were a savior, you would bring our patient back to life. (N6)

Resuscitation events can at times be very visually disturbing, with a number of invasive procedures being performed simultaneously, together with staff moving quickly around the bedside in order to perform the required tasks. This, in turn, can be a confusing and disturbing event for family members with a limited understanding of what they are witnessing while present in the resuscitation room. Participants stated that the presence of family members at the resuscitation can conjure up a bad mental image in their minds and may cause posttraumatic problems in the future. One participant stated, "Tracheal intubation and dropping onto patient's body due to perform cardiac massage or administer shock to patient are not good scenes, ... we had a family who passed out because he couldn't stand the scene of resuscitation" (D7). Another participant stated,

Our actions are aggressive, say we perform intubation, cardiac massage, all of these conjure up bad experience in a family, and affect their psyche, as you can see they collapse and then we have to stop treating the patient and take care of his or her family. For example, we had a case where patient's family came in the resuscitation room and they fainted watching the patient and our actions. (D4)

Supportive Presence

The second theme that emerged from the data was supportive and positive presence that the family can have at the scene of the resuscitation. Participants found family presence during resuscitation helped to create trust in the resuscitation team members, stating that the family would be reassured and put at ease when watching the efforts of the resuscitation team. One participant gave an example: "In ICU we had a patient whose families were so understanding and thoughtful ... they asked about the treatment process and procedures politely, they came in my room a few times and thanked me for our effort" (D3).

Some families were cooperative with the resuscitation team while being present in the resuscitation room, going so far as to assist when able, which aided the team in primary tasks. For example, "I seek their assistance, ... I asked them to hold the patient's hand for a second and do not let him shake it, ... hand that to me" (N6). In another example, "... the son of the patient pulled his sister aside and tried to console her ... . Even after CPR, he helped us with putting devices back and transporting them" (N2).

According to the experiences of the participants, when family members are allowed to be present, and they can see the resuscitation event, their concerns are decreased and or disappear following reassurance from the resuscitation team members. One participant stated, "... when they [family] watch the resuscitation, they are convinced that everything was done, and if the patient passes away ... there is no negligence from the resuscitation team's actions, and they accept death" (D8). A nurse gave another example: "There was a case in which she [family] was on the edge and made a lot a noise, we then allowed

her to come in the room ... she settled having seen the scene of resuscitation" (N4).

Participants believed that when family members are permitted to be present in the resuscitation room it can help to settle their nerves, which will in turn improve their overall satisfaction with the resuscitation team, having watched the efforts of team members regardless of the outcome of the resuscitation. One participant spoke about a cardiac arrest case that occurred on the street and the patient was then transferred to the hospital:

> I felt that patient family were satisfied with the efforts of resuscitation team [in the face of their patient's death], because they presented at the scene [resuscitation room] and watched the efforts, witnessing that a number of hospital personnel came to the resuscitation room to help, all of these can soothe the families and make the family satisfied with hospital personnel, so they have the feeling that all necessary actions were taken for patient. (N3)

Participants stated that the presence of family members during resuscitation can appear to settle the nerves of the families, reducing their agitation and eliminating their need to argue with resuscitation team members. One participant stated that "... when he [family] sees the resuscitation team try their best and their efforts are not futile, then argument at the end of resuscitation will be decreased" (D8).

Discussion

Similar to the results of the present study, Tudor, Berger, Polivka, Chlebowy, and Thomas (2014) identified the following themes: fear of family interference in the resuscitation event, increasing stress in the resuscitation team, and emotional trauma for family members. Moreover, a review of the literature indicated that families believed that being present during resuscitation was their right, and that it helped with the grieving process (Tudor et al., 2014). In the study conducted by Porter, Cooper, and Sellick (2014), which investigated the perceived benefits and barriers to FPDR implementation, the results indicated that the advantages of FPDR included assisting the family with their grief process, observation of the resuscitation team's efforts at close range, increase of awareness and satisfaction of families, and facilitation of acceptance of the patient's situation. FPDR barriers included the resuscitation team's stress increase, intervention and cessation of the resuscitation process by the family, the team's apprehension over legal issues, psychological trauma to the family, and disruption of the resuscitation team's focus (Porter et al., 2014). This was also found in the current study.

In the current study, participating nurses and doctors had a state of duality and hesitation whether patients' families should be allowed in the resuscitation room. On the one hand, based on their experiences, they found the presence of the family to be helpful, compared to family presence interrupting and becoming an obstacle to the work required during a resuscitation event. Further, according to the behavior and reaction the participants have seen from family members, the participants were divided into two groups: supporting the team and the actions of resuscitation, and disrupting and interfering in resuscitation events. The participants noted that FPDR has both beneficial and harmful aspects, in the sense that it can evoke a sense of trust in the resuscitation team, and it can provoke stress and interruption to the team. It can increase the satisfaction of the family with resuscitation team members, or it can cause dissatisfaction, resulting in argumentative behavior from family members.

Sak-Dankosky, Andruszkiewicz, Sherwood, and Kvist (2014) conducted a study with the aim of reviewing nurses' and physicians' experiences and attitudes towards inpatient-witnessed adult resuscitations, and the results yielded 15 articles that described the differences in nurses' and doctors' experiences of FPDR. FPDR as a phenomenon is influenced by the cultural context having both positive and negative effects on the resuscitation team and patient's family (Sak-Dankosky et al., 2014).

Such dichotomy of FPDR is seen in the results of Walker's (2013) study, which was conducted with the aim of investigating emergency care staff's experiences of lay presence during adult CPR. The results indicated that FPDR had both benefits for staff, family, and the patient and concerns and/or problems according to the experiences of the participants. The families were considered to be a valuable information resource as they showed positive cooperation behaviors, findings similar to those in the current study. Further, a number of the participants became agitated and anxious when they were present in the resuscitation room, which was also confirmed in the current study. The emergency staff in the Walker study complained about working under pressure while others, on the contrary, stated high self-confidence levels as one of the main reasons for adapting FPDR (Walker, 2013).

Similar to the findings of the current study, Sak-Dankosky et al. (2014) found that family members allowed to be present experienced no additional trauma as a result, and they were satisfied and pleased with the opportunity to be present at the bedside. The Chew and Ghani (2014) study explored attitudes and perceptions of the general Malaysian public regarding FPDR. Results indicated that 76% of 184 individuals being studied supported FPDR, and found the experience reassured family members that all necessary measures were taken in the

attempt to save the patient's life; this was deemed as the most important reason for being present (Chew & Ghani, 2014). These findings were consistent with those of the current study.

Conclusions

Participants stated that FPDR may work as a double-edged sword to family and the resuscitation team, hurting or preserving quality. On the one hand, they found the presence of family to be helpful, but they also saw family presence as an interruption and obstacle to work.

Our findings provide valuable insight into the perceived benefits of a liaison support person, the importance of well-trained and expert CPR team members, and the concerns that need to be addressed through education and resource allocation.

Hospitals need to change practice and policy related to FPDR to align with professional practice guidelines. A formal organizational FPDR policy will ensure that clear guidelines exist around implementation, staff responsibilities, and expectations of suitable behavior from family members permitted into the resuscitation room.

Acknowledgments

This article has been extracted from a nursing doctoral dissertation with the ethic committee number TBZMED.REC.1394.274. I hereby express my deep sense of gratitude to all participants who attended the sessions and allowed us to record their experiences.

Clinical Resources

- American Association of Critical-Care Nurses: http://www.aacn.org/wd/practice/content/family-presence-practice-alert.pcms?menu=practice
- Emergency Nurses Association: https://www.ena.org/practice-search/research/CPG/Documents/FamilyPresenceSynopsis

References

American Heart Association. (2013). *Cardiac arrest statistics*. Retrieved from http://www.heart.org/HEARTORG/General/Cardiac-Arrest-Statistics_UCM_448311_Article.jsp

Badir, A., & Sepit, D. (2007). Family presence during CPR: A study of the experiences and opinions of Turkish critical care nurses. *International Journal of Nursing Studies*, *44*(1), 83–92.

Cepero, J. (2012). *How do the attitudes and beliefs of critical care nurses influence the process for family presence resuscitation?* Washington, DC: School of Nursing of the Catholic University of America.

Chew, K. S., & Ghani, Z. A. (2014). Attitudes and perceptions of the general Malaysian public regarding family presence during resuscitation. *Singapore Medical Journal*, *55*(8), 439–442.

Demir, F. (2008). Presence of patients' families during cardiopulmonary resuscitation: Physicians' and nurses' opinions. *Journal of Advanced Nursing*, *63*(4), 409–416.

Duran, C. R., Oman, K. S., Abel, J. J., Koziel, V. M., & Szymanski, D. (2007). Attitudes toward and beliefs about family presence: A survey of healthcare providers, patients' families, and patients. *American Journal of Critical Care*, *16*(3), 270–279.

Gharakhani, M., Naghsh Tabrizi, B., Emami, F., & Seif Rabiee, M. (2007). Evaluation of the time interval between the beginning of acute chest pain in the patients with acute myocardial infarction and admission of them at coronary care unit and the related factors. *Scientific Journal of Hamadan University of Medical Sciences and Health Services*, *14*(2), 51–55.

Gluck[JC13], D. M. (2014). *How past experiences impact a nurse's decision about family presence during resuscitation: A phenomenological study*. Tempe, AZ: University of Phoenix.

Holloway, I., & Wheeler, S. (2013). *Qualitative research in nursing and healthcare*. Oxford, UK: John Wiley & Sons.

Knott, A., & Kee, C. C. (2005). Nurses' beliefs about family presence during resuscitation. *Applied Nursing Research*, *18*(4), 192–198.

Macy, C., Lampe, E., O'Neil, B., Swor, R., Zalenski, R., & Compton, S. (2006). The relationship between the hospital setting and perceptions of family-witnessed resuscitation in the emergency department. *Resuscitation*, *70*(1), 74–79.

Mccabe, M. (2014). *Impact of family presence in the healthcare setting*. Lynchburg, VA: Liberty University.

McClement, S. E., Fallis, W. M., & Pereira, A. (2009). Family presence during resuscitation: Canadian critical care nurses' perspectives. *Journal of Nursing Scholarship*, *41*(3), 233–240.

Parsapoor, A., Bagheri, A., & Larijani, B. (2010). Review of revolution of patient's right charter. *Iranian Journal of Medical Ethics and History of Medicine*, *3*, 39–47.

Polit, D., & Beck, C. (2012). *Essentials of nursing research methods, appraisal, and utilization*. Philadelphia, PA: Lippincott Williams & Wilkins.

Porter, J. E., Cooper, S. J., & Sellick, K. (2014). Family presence during resuscitation (FPDR): Perceived benefits, barriers and enablers to implementation and practice. *International Emergency Nursing*, *22*(2), 69–74.

Powers, K. A., & Candela, L. (2016). Family presence during resuscitation: Impact of online learning on nurses' perception and self-confidence. *American Journal of Critical Care*, *25*(4), 302–309.

Sak-Dankosky, N., Andruszkiewicz, P., Sherwood, P. R., & Kvist, T. (2014). Integrative review: Nurses' and physicians' experiences and attitudes towards

inpatient-witnessed resuscitation of an adult patient. *Journal of Advanced Nursing*, *70*(5), 957–974.

Salari, A., Vanaki, Z., & Ahmadi, F. (2010). Survival rate and outcomes of cardiopulmonary resuscitation. *Iranian Journal of Critical Care Nursing*, *3*(2), 45–49.

Salmond, S. W., Paplanus, L. M., & Avadhani, A. (2014). Using systematic reviews to guide decision making about family-witnessed resuscitation. *Journal of PeriAnesthesia Nursing*, *29*(6), 480–490.

Soleimanpour, H., Tabrizi, J. S., Farnam, A., Nikakhtar, M., Mokhtarpour, M., Golzari, S. E.,. . . Esfanjani, R. M. (2013). Attitudes of emergency medicine physicians towards family presence during resuscitation. *Resuscitation*, *84*(12), e149–e150.

Tudor, K., Berger, J., Polivka, B. J., Chlebowy, R., & Thomas, B. (2014). Nurses' perceptions of family presence during resuscitation. *American Journal of Critical Care*, *23*(6), e88–e96.

Twibell, R. S., Siela, D., Riwitis, C., Wheatley, J., Riegle, T., Bousman, D.,. . . Neal, A. (2008). Nurses' perceptions of their self-confidence and the benefits and risks of family presence during resuscitation. *American Journal of Critical Care*, *17*(2), 101–111.

Van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy*. Albany, NY: State University of New York Press.

Vavarouta, A., Xanthos, T., Papadimitriou, L., Kouskouni, E., & Iacovidou, N. (2011). Family presence during resuscitation and invasive procedures: Physicians and nurses; attitudes working in pediatric departments in Greece. *Resuscitation*, *82*(6), 713–716.

Wagner, J. M. (2004). Lived experience of critically ill patients' family members during cardiopulmonary resuscitation. *American Journal of Critical Care*, *13*(5), 416–420.

Walker, W. M. (2013). Emergency care staff experiences of lay presence during adult cardiopulmonary resuscitation: A phenomenological study. *Emergency Medicine Journal,* emermed-2012-201984. doi:10.1136/emermed-2012-201984

Ward, A. E. (2011). *Nurses' views of family presence at the bedside during resuscitation*. Muncie, IN: Ball State University.

Westley, M. E., Ching, J. M., Sherman, S. A., & Smith, I. A. (2014). Opening the ICU doors. In *Healthcare* (pp. 258–262). Seattle, WA: Elsevier.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Is an Engaging or Soothing Environment Associated With the Psychological Well-Being of People With Dementia in Long-Term Care?

Kyung Hee Lee, PhD, RN,MPH, GNP[1], Marie Boltz, PhD, RN, GNP-BC, FAAN[2], Hana Lee, PhD[3], & Donna L. Algase, PhD, RN[4]

1 *Lambda Alpha-at-Large*, Assistant Professor, Yonsei University College of Nursing, Seoul, South Korea
2 *Beta Sigma*, Associate Professor, Pennsylvania State University, College of Nursing, University Park, PA, USA
3 Assistant Professor, Brown University, Department of Biostatistics, School of Public Health, Providence, RI, USA
4 Professor Emerita, University of Michigan, School of Nursing, Ann Arbor, MI, USA

Key words
Ambiance, dementia, psychological well-being

Correspondence
Dr. Kyung Hee Lee, Yonsei University College of Nursing, 50–1 Yonsei-Ro, Seodaemun-Gu, Seoul, Korea 03722.
E-mail: kyungheelee@yuhs.ac

Accepted October 2, 2016

doi: 10.1111/jnu.12263

Abstract

Purpose: To examine the relationship between environmental ambience and psychological well-being of persons with dementia.
Design: A secondary analysis was conducted using observational data with repeated measures. A total of 1,857 observations from 177 persons with dementia in 17 nursing homes and 6 assisted living facilities were included.
Methods: Psychological well-being was measured by observed displays of positive and negative emotional expressions. The environmental ambience was assessed by two subscales of the Ambiance Scale: Engaging and Soothing. Multilevel modeling was used to account for hierarchical structures in the data.
Findings: An engaging environment was associated with more positive emotional expressions after controlling for covariates. However, a soothing environment was associated with neither positive nor negative emotional expressions.
Conclusions: Results suggest that the environment is an important consideration for administrators and clinicians as they respond to the mandate to actively plan and provide care to persons with dementia.
Clinical Relevance: An environment that is relevant and interesting may promote a sense of well-being and support resident-centered care.

An estimated 46.8 million people worldwide were living with dementia in 2015 (Alzheimer's Disease International, 2015); more than 40% of residents in residential care facilities have Alzheimer's or another type of dementia in the United States (Molica & Ujvari, 2012). In addition, average out-of-pocket costs for older adults with dementia in long-term care were the highest among Medicare beneficiaries (Alzheimer's Association, 2015). Although the Centers for Medicare and Medicaid Services (CMS) established improvement of dementia care as a national priority, including person-centered care for nursing home residents, the majority of long-term care studies have focused on behavioral problems in persons with dementia rather than psychological well-being (CMS, 2013).

The measurement of psychological well-being, a key determinant of quality of life (QoL; Ferrans, 2005) poses a challenge in dementia research. Psychological well-being, a multidimensional phenomenon that typically relies on self-report, is difficult to obtain from persons with moderate to severe dementia due to language impairment (Beer et al., 2010). However, some studies have shown that psychological well-being of persons with dementia can be reliably measured using observed displays of emotional expression (Kolanowski, Litaker, & Catalano, 2002; Lee, Algase, & McConnell, 2013).

According to the Ecology Theory of Aging (ETA) by Lawton and Nahenow (1973), combinations of person-related competencies and environments affect individuals' behaviors and function. The ETA suggests that intrapersonal characteristics (e.g., personality and cognitive function) and environmental factors interact to influence successful aging. In persons with dementia, behavioral issues have been long recognized as signs of chaotic interactions with the environment (Roberts & Algase, 1988). The significant relationship between personality and psychological well-being in persons with cognitive impairment was supported (Burgener, Twigg, & Popovich, 2005).

In general, people relate to the environment on an emotional level. Brain pathways that process emotions are relatively spared in dementias such as Alzheimer's disease (Algase et al., 2007). As cognitive processes decline, emotion is considered the salient mechanism by which persons with dementia relate to and process information from and about the environment (LeDoux, 1996; Pankesepp, 1998).

The Environment and Psychological Well-Being

The environment is an important factor to consider when enhancing psychological well-being in persons with dementia because it is modifiable and can be used as a nonpharmacological intervention (Flynn, Liang, Dickson, & Aiken, 2010; Szanton et al., 2011). Examining the relationship between the environment and well-being in dementia is relatively recent research, and the results are mixed. Studies have reported the influence of the environment on nursing home residents' behavioral manifestations of psychological distress. Residents in small-scale, homelike living facilities showed less aggressive behaviors but more aberrant motor behaviors than residents in traditional wards (Verbeek et al., 2014). Using a global rating of self-reported QoL, a recent study showed that a high quality rating of the overall physical environment is associated with better QoL in nursing home residents with dementia, but the association was no longer significant with the use of proxy or detailed self-report ratings (Fleming, Goodenough, Low, Chenoweth, & Brodaty, 2014).

A small number of studies showed the effect of specific physical environmental determinants (i.e., temperature, noise, and light) on the well-being of persons with dementia in long-term care. An observational study in Spain reported that high temperature in the bedroom was significantly associated with lower QoL of nursing home residents with severe dementia after controlling for residents' pain scores, psychiatric symptoms, and functional levels (Garre-Olmo et al., 2012). One Canadian qualitative study found that noise was one of the most important physical environment determinants on well-being of persons with dementia (Garcia et al., 2012). This study also emphasized the importance of human environments, such as interaction with staff, individualized care, and activities to improve well-being in nursing home residents. Thus, more studies are needed to confirm the relationship between the quality of the environment and psychological well-being of persons with dementia in long-term care using valid measurements.

Environmental Ambience

Environmental interventions for the person with dementia have largely focused on modifying environmental ambience, defined as the overall effect of physical and social environment that generates affective and behavioral responses (Algase et al., 2007). In persons with dementia, positive environmental ambience has been characterized as either promoting engagement of the resident or soothing the resident (Algase et al., 2007). Engagement, defined as the act of being occupied or involved with an external stimulus (Cohen-Mansfield, Dakheel-Ali, & Marx, 2009), has been associated with positive emotional responses, including the relief of apathy, boredom, depression, and loneliness in nursing home residents (Sifton, 2001). Thus, quality environments are frequently described as providing features that are interesting and promote cognitive and physical activity. Accordingly, an engaging environment would support emotional interaction (Algase et al., 2007) and likely yield positive emotions in persons with dementia.

Additionally, physical plan features (such as ambient lighting and sound) that are soothing have been found to positively influence behavior (Algase, Beattie, Antonakos, Beel-Bates, & Yao, 2010). Thus, a soothing environment would lessen anxiety and promote calm (Algase et al., 2007) and likely yield positive emotions in persons with dementia. However, the contribution of these environmental characteristics to the emotional status of nursing home residents is not well known.

The present study examined the relationship between environmental ambiance, using an observational rating scale of the immediate nursing home environment, and psychological well-being of persons with dementia, using observed displays of emotional expression. The purpose was to evaluate the influence of the environmental ambiance on psychological well-being. The following hypotheses were tested:

H1: An engaging environment is associated with positive but not negative emotional expression, after

controlling for cognitive status, premorbid personality trait, comorbidity, and demographic variables.

H2: A soothing environment is associated with positive but not negative emotional expression, after controlling for cognitive status, premorbid personality trait, comorbidity, and demographic variables.

Methods

Data Source and Participants

This is a secondary analysis of data from persons with dementia who lived in residential long-term care (Algase et al., 2008). The parent study utilized a nested within subjects design to evaluate background and proximal factors of the phenomenon of wandering. The parent study included 185 persons with dementia in 17 nursing homes and 6 assisted living facilities from two states in the United States who were 65 years of age or older, were English-speaking, had a Mini-Mental Status Examination (MMSE) score of <24/30, met *Diagnostic and Statistical Manual of Mental Disorders* (4th edition; DSM-IV) criteria for dementia, and were not wheelchair-bound. Facilities were selected using a random cluster sampling. Participants who met inclusion criteria were randomly assigned to twelve 20 min observation periods once per hour. The environmental ambiance was assessed at the end of each observation period by the research assistant who videotaped the participant. All observation periods were videotaped and occurred from 8 AM to 8 PM. After institutional review board approval from the university and each participating facility, written consent was obtained from legal proxies of participants and assent was also obtained from participants prior to every observation. All research assistants (RAs) received 8 to 12 hr of training before data collection. In addition, desensitization of staff and residents to videotaping equipment occurred during the subject screening process (Algase et al., 2008); cameras were placed in locations throughout the facility for 1 to 2 hr periods, but no taping was done.

The present study used data from those participants who completed more than three emotional expression observations that evaluated psychological well-being. Thus, a total of 177 participants with 1,857 observations were included. There were no significant differences in demographic characteristics between participants who were included and excluded in this study.

Measures

Dependent variable. Psychological well-being was measured by the Observable Displays of Affect Scale (ODAS), which was designed to rate videotaped emotional expressions of persons with cognitive impairment. The ODAS contains 34 items of positive and negative facial displays, vocalizations, and body movement or posture (Vogelpohl & Beck, 1997). The specific description for each item was provided to trained RAs. RAs coded video tapes of participants' emotional expression using the Noldus Observer® 5.0 software (Noldus Information Technology, Wageningen, The Netherlands. In the parent study, an inter- and intra-rater agreement among coders was established at greater than 95% using training videotapes before coding for the ODAS measures began. Reliability was assessed throughout the study by sampling 10% of the videotapes and retraining coders if needed. Evidence substantiating inter-rater reliability (0.68–1.00) and test-retest reliability (0.97–1.00) for the ODAS has been reported (Vogelpohl & Beck, 1997; Whall et al., 2008).

Independent variable. Environmental ambience was assessed by two subscales of the Ambiance Scale (AS): Engaging and Soothing. The AS is a nine-item instrument to rate immediate nursing home environment by observers using a semantic differential scaling model (+2 to −2), with 0 being neutral, indicating neither a negative nor a positive emotional valence to the environment (Algase et al., 2007). A two-factor solution was obtained in factor analyses and labeled as engaging and soothing (Algase et al., 2007). Each subscale score ranged from −2 to 2. RAs who videotaped emotional expressions administered the AS at the end of each observation period. Cronbach's alphas for the current study were .93 for the engaging subscale and .61 for the soothing subscale.

Covariates. Cognitive status, comorbidity, mobility, premorbid personality traits, facility type, and demographic variables were included as potential covariates.

Cognitive status. Cognitive status was measured using the MMSE (Folstein, Folstein, & McHugh, 1975). Participants who were too impaired to finish the test were assigned a score of –1, as had been done in the parent study (Algase et al., 2008).

Comorbidity. Comorbidity was assessed by the Cumulative Illness Rating Scale-Geriatric (CIRS-G), which was developed to reflect medical problems of older adults (Miller et al., 1992). The CIRS-G is a comorbidity index based on physician or nurse practitioner ratings of presence and severity of chronic medical conditions for 14 organ systems, with 0 indicating no problem and 4 indicating severe level of problem. Inter-rater reliability for the CIRS-G total score was reported from 0.78 to 0.88 (Miller et al., 1992), and validity of the scale was

established in a study of 439 institutionalized elders by examining its associations with mortality, hospitalization, medication usage, and laboratory findings (Parmelee, Thuras, Katz, & Lawton, 1995).

Mobility. Mobility was categorized as independent (no need for mechanical devices [e.g., cane, walker]) and assisted (need some mechanical devices or staff assistance to ambulate) by a nurse practitioner.

Premorbid personality traits. Premorbid personality traits were collected by telephone interview with an informant who was usually a spouse or an adult child using the NEO Five-Factor Personality Inventory (NEO-FFI; Costa & McCrae, 1992). The NEO-FFI is a 60 item, 5 point scale for comprehensive assessment of adult personality in five domains: neuroticism, extraversion, openness, agreeableness, and conscientiousness. Each domain has 12 items, and each item receives a score of 0 (*strongly disagree*) through 4 (*strongly agree*). The informant was asked to respond based on the participant's personality as he or she was 10 years before the onset of dementia. *T* scores were computed from the raw scores of the NEO-FFI five domains using normative sample means and standard deviations, which differ by gender (Costa & McCrae, 1992). Cronbach's alphas obtained from this study were 0.88, 0.85, 0.72, 0.88, and 0.89 for neuroticism, extraversion, openness, agreeableness, and conscientiousness, respectively.

Facility type. Facility type was categorized as nursing home or assisted living facility.

Demographic variables. Demographic variables included age (continuous variable), gender (0 = *male*, 1 = *female*), and education (1 = *less than high school*, 2 = *high school*, 3 = *college or higher*).

Time of day. Time of day recorded the time when an observation was made using a 24 hr clock.

Analysis

To examine the effect of quality of environment on psychological well-being, authors defined the outcome as log-transformed emotional expressions. Since the dependent variables (i.e., positive and negative emotional expression) were skewed (to the right) the log-transformation was used to make the emotional expressions to meet the normal distribution assumption. As the log-transformation preserves the order of the original values (i.e., log is a monotone nondecreasing function), authors interpreted the effect of covariates on emotional expressions based on model coefficients themselves, rather than exponentiated values (Benoit, 2011). A multilevel (mixed) model was employed to account for hierarchical structures in the data. In particular, the emotional expressions were repeatedly measured from individuals where those participants were further nested within facility type (assisted living or nursing home). A study reported that the type of facility may influence the participants' experiences and responses (Beattie, Song, & LaGore, 2005). Therefore, a multilevel model was used based on the assumption that the shared attributes (i.e., repeated measures within the same individuals within the same facility) have an effect on the outcome being modeled. Finally, authors controlled for the time of day variable to allow the emotional expressions to change over time. Characteristics of covariates for possible inclusion in the multilevel model are shown in **Table 1**. Among the total MMSE score and categorized MMSE variables, the total score was used in the multilevel model. Authors fit univariate multilevel models considering each emotional expression as a sole response. For each response, the final model was chosen by the forward selection method starting from a model controlling for either engaging or soothing environment while allowing

Table 1. Characteristics of 177 Participants

Characteristics	Mean (*SD*)	Interquartile range[a]	*n* (%)
Age (years)	83.64 (6.39)	79 to 88	
Caucasian			139 (78.53)
Female			135 (76.27)
Education			
< High school			40 (22.60)
High school			65 (36.72)
> High school			48 (27.12)
Nursing home			110 (62.15)
MMSE total	7.35 (7.19)	−1 to 13	
MMSE			
Mild			22 (13.4)
Moderate			34 (20.7)
Severe			64 (39.0)
Untestable			44 (26.8)
CIRS-G score	0.69 (0.22)	0.57 to 0.86	
Personality			
Neuroticism	51.05 (12.07)	42.66 to 69.66	
Extraversion	50.81 (12.98)	41.77 to 59.45	
Openness	38.99 (10.31)	31.35 to 45.92	
Agreeableness	49.72 (12.39)	42.46 to 58.23	
Conscientiousness	50.33 (9.92)	45.45 to 56.70	
Independent mobility			116 (65.54)

Note. CIRS-G = Cumulative Illness Rating Scale-Geriatric; MMSE = Mini-Mental Status Examination.

[a]Interquartile range denotes values from 25% to 75% quartiles.

Journal of Nursing Scholarship, 2017; 49:2, 135–142.

Table 2. Factors Influencing Positive Emotional Expression

Variables	Coefficient[a]	SE	95% CI	*p*
Engaging scale	0.173	0.043	0.088, 0.257	<.001
Hour	0.046	0.009	0.029, 0.064	<.001
Neuroticism	0.008	0.004	0.000, 0.016	.038
Total MMSE	0.014	0.007	0.001, 0.028	.037

Note. CI = confidence interval; MMSE = Mini-Mental Status Examination.
[a]Raw scores are transformed by log-scale due to skewness.

for random effects by facility type and individual subject. Each variable was added to assess if the added variable altered the effect of the environment variable. All the analyses were performed with a mixed procedure in Stata 14.0 (StataCorp LP, College Station, TX, USA).

Results

Participant Characteristics

Table 1 contains participant characteristics. More than 75% of participants were Caucasian and female with an average age of 83.64 years ($SD = 6.39$). The mean MMSE score was 6.93 (range = –1 to 21). Over 59.7% of participants had moderate to severe cognitive impairment (MMSE ≤ 16) and 26.8% of participants were untestable. The mean positive emotional expression was 65.89 per 20 min, while the mean negative emotional expression was 8.98 per 20 min.

Positive Emotional Expression

Engaging environment was highly associated with positive emotional expression among persons with dementia, controlling for hour, neuroticism personality trait, and MMSE score ($\beta = 0.173$; $p < .0001$). There was no evidence of random effect by facility type on positive emotional scales. Therefore, facility type was fitted as a fixed effect; however, there was no significant association between positive emotional scales and facility type. Consequently, the final model shown in **Table 2** accounted for within-subject correlation only. More engaging environment, higher neuroticism, and higher MMSE score were associated with more positive emotional expression at a given time. Soothing environment was not significantly associated with positive emotional expression at the alpha = 0.05 level, when used as a sole covariate. In addition, there was no added effect by soothing environment on improving positive emotional expression when engaging environment was incorporated in the model. Individual difference was minimal (estimated random effect [ERE] = 0.002; 95% confidence interval [CI] = 0.000, 0.007).

Table 3. Factors Influencing Negative Emotional Expression

Variables	Coefficient[a]	SE	95% CI	*p*
Hour	0.015	0.007	0.002, 0.028	.023
Total MMSE	−0.018	0.005	−0.027, −0.009	<.001
Conscientiousness	−0.008	0.003	−0.015, −0.002	.014

Note. CI = confidence interval; MMSE = Mini-Mental Status Examination.
[a]Raw scores are transformed by log-scale due to skewness.

Negative Emotional Expression

Unlike positive emotional expression, the multilevel model for negative emotional expression showed there was statistical evidence for similarity shared by individuals living in the same type of facility, in addition to within-subject correlation. Therefore, the final multilevel model chosen for negative emotional expression reflected such hierarchy. Although either engaging or soothing environment was not significantly associated with negative emotional expression, the investigators found factors influenced negative emotional expression among persons with dementia; higher MMSE score (adjusted coefficient estimate [ACE] = –0.018; 95% CI = –0.027, 0.009) and higher conscientiousness personality (ACE = –0.008; 95% CI = –0.015, 0.002) were shown to be associated with less negative emotional expression at a given time. The effect of facility type on negative emotional expression was minimal (ERE = 0.001; 95% CI = 0.000, 0.473), whereas individual difference has a larger effect in view of its larger variance (ERE = 0.077; 95% CI = 0.048, 0.123). Therefore, expressing negative emotional expression may vary by individual difference rather than facility type among persons with dementia. **Table 3** summarizes results obtained from the final multilevel model fit for negative emotional expression.

Discussion

This is the first study that considers the influence of environmental ambience upon psychological well-being in persons with dementia. The study yielded several important findings. First, an engaging environment was positively associated with more positive emotional expression of persons with dementia after controlling for their cognitive status and other covariates, whereas soothing environment was associated with neither positive nor negative emotional expressions of persons with dementia. This article's unique contribution to science is to show an immediate effect of environmental quality on emotional expressions of persons with dementia. The nature of the engaging and soothing dimensions of ambiance reflect how one experiences or apprehends the environment unconsciously. It does not require cognition, so is a

particularly useful notion in working with individuals with cognitive deficits (Yao & Algase, 2006; Zajonc, 1980).

The positive influence of an engaging environment is corroborated by early studies demonstrating that engagement between persons with cognitive impairment and environmental stimuli has yielded positive emotions and improved QoL (Engelman, Altus, & Mathews, 1999; Orsulic-Jeras, Judge, & Camp, 2000). Results suggest the environment is an important consideration for administrators and clinicians as they respond to the mandate to actively plan and provide care that supports psychological well-being in persons with dementia, and avoid chemical restraints (Bonner et al., 2015). The identification of the discrete characteristics of the environment that promote engagement is an area for future research, as are the potential functional benefits. The contribution of staff efforts as a potential mediator or moderator to engagement also warrants investigation in order to align activity programs with meaningful environmental approaches.

An unexpected finding was the lack of association between a soothing environment and both positive and negative emotional expression. There is a possibility that a soothing environment does not necessarily provide the type of meaningful stimulation that promotes psychological well-being.

Second, two out of five premorbid personality traits were associated with emotional expressions: the neuroticism personality trait was related to more frequent positive emotional expression, while the conscientiousness personality trait was related to fewer negative emotional expressions. The negative relationship between conscientiousness and negative emotional expression is expected because persons with a conscientious personality tend to control their impulses or desires (Costa, McCrae, & Dye, 1991). However, the relationship between neuroticism and positive emotional expression is a somewhat unexpected finding. Traditionally, neuroticism is associated with more negative emotional expression; extraversion is associated with more positive emotional expression. However, according to Ng's (2009, 2012) experimental studies with cognitively intact adults, persons with higher neuroticism showed more negative emotions and fewer positive emotions than persons with lower neuroticism in an unpleasant situation. However, there was no significant emotional expression difference between two groups in a pleasant situation (Ng, 2009, 2012). The response to a pleasant event was as positive in low neuroticism individuals as in high neuroticism individuals. An engaging environment may be beneficial, especially for persons with dementia who have the neuroticism personality trait to improve their psychological well-being. In addition, premorbid personality traits do not reflect current personality but past personality traits. Although personality is relatively stable with aging, research showed that personality changes may happen with a dementia diagnosis (Balsis, Carpenter, & Storandt, 2005; Jacomb & Jorm, 1996; Wang et al., 2009). Thus, it is important to monitor personality changes in persons with and without dementia.

Lastly, cognitive status was a significant independent factor on both positive and negative emotional expressions; better cognitive status was associated with more positive emotional expressions and fewer negative emotional expressions. This is a consistent finding with existing literature (Kurz, Scuvee-Moreau, Vernooij-Dassen, & Dresse, 2003). Although cognitive status is not the unique factor influencing psychological well-being among persons with dementia, it is certain that cognitive status is one of the important elements.

Strengths and Limitations

One of the main strengths of this article was the use of multilevel data; participants are clustered within nursing homes selected by a random sampling mechanism, and their outcomes are measured repeatedly over time. Research has shown that ignoring the hierarchy in data can lead to the underestimation of variance, which can seriously inflate the Type I error rate and overstate the statistical significance of an effect of a factor of interest (Aitkin & Longford, 1986; Goldstein & McDonald, 1988). As the parent data can be viewed as having three levels (facility, individuals, and time), we used the multilevel model allowing for random effects by facility and individuals instead of using the generalized estimating equation approach that does not incorporate the random effects.

This study has several limitations of a secondary data analysis. Since data collection consisted of 12 observations conducted in a short period, the long-term effect of environment was not examined. Further research using longitudinal data would be needed to examine the sustained effect of an engaging environment upon psychological well-being over time. Due to the nonrandom nature of the study, investigators were not able to examine any causal relationship but were able to show the association between quality of environment and psychological well-being. A future study to evaluate the potentially synergistic effect of the environment and personality upon emotional well-being is warranted. Additionally, researchers used observers' perspective of quality of environment to capture participants' ambiance. In order to maintain reliability, this was appropriate to assess participants' perception of environment because 87% of participants in this study had moderate to severe dementia.

Conclusions

This study offers important clinical implications for long-term care clinicians and administrators. Findings suggest that an engaging environment is an important consideration when planning and providing care to persons with dementia. An environment that is relevant and interesting may promote a sense of well-being and support resident-centered care.

Acknowledgments

Data for this project were obtained with support from the National Institute of Nursing Research (R01 NR04569; principal investigator Donna L. Algase).

Clinical Resources

- Alzheimer's Association: http://www.alz.org/
- Alzheimer's Disease International: http://www.alz.co.uk/
- Alzheimer's Society: https://www.alzheimers.org.uk/
- IDEAS Institute: http://www.ideasinstitute.org/about.asp

References

Aitkin, M., & Longford, N. (1986). Statistical modelling issues in school effectiveness studies. *Journal of the Royal Statistical Society. Series A*, *149*(1), 1–43.

Algase, D. L., Antonakos, C., Yao, L., Beattie, E. R., Hong, G. R., & Beel-Bates, C. A. (2008). Are wandering and physically nonaggressive agitation equivalent? *American Journal of Geriatric Psychiatry*, *16*(4), 293–299.

Algase, D. L., Beattie, E. R. A., Antonakos, C., Beel-Bates, C. A., & Yao, L. (2010). Wandering and the physical environment. American Journal of Alzheimer's Disease and Other Dementias, *25*(4), 340–346.

Algase, D. L., Yao, L., Son, G.-R., Beattie, E. R. A., Beck, C., & Whall, A. F. (2007). Initial psychometrics of the ambiance scale: A tool to study person-environment interaction in dementia. *Aging and Mental Health*, *11*(3), 266–272.

Alzheimer's Association. (2015). *2015 Alzheimer's disease facts and figures*. Retrieved from https://www.alz.org/facts/downloads/facts_figures_2015.pdf.

Alzheimer's Disease International. (2015). *World Alzheimer Report 2015: The global impact of dementia*. Retrieved from http://www.worldalzreport2015.org/downloads/world-alzheimer-report-2015.pdf.

Balsis, S., Carpenter, B. D., & Storandt, M. (2005). Personality change precedes clinical diagnosis of dementia of the alzheimer type. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *60*(2), P98–P101.

Beattie, E. R. A., Song, J., & LaGore, S. (2005). A comparison of wandering behavior in nursing homes and assisted living facilities. *Research and Theory for Nursing Practice*, *19*(2), 181–196.

Beer, C., Flicker, L., Horner, B., Bretland, N., Scherer, S., Lautenschlager, N. T., ... Almeida, O. P. (2010). Factors associated with self and informant ratings of the quality of life of people with dementia living in care facilities: A cross sectional study. *PLoS ONE*, *5*(12), e15621. doi: 10.1371/journal.pone.0015621

Benoit, K. (2011). *Linear regression models with logarithmic transformations*. London, England: London School of Economics.

Bonner, A. F., Field, T. S., Lemay, C. A., Mazor, K. M., Andersen, D. A., Compher, C. J., ... Gurwitz, J. H. (2015). Rationales that providers and family members cited for the use of antipsychotic medications in nursing home residents with dementia. *Journal of the American Geriatrics Society*, *63*(2), 302–308.

Burgener, S. C., Twigg, P., & Popovich, A. (2005). Measuring psychological well-being in cognitively impaired persons. *Dementia*, *4*(4), 463–485.

Centers for Medicare and Medicaid Services. (2013). *Improving dementia care and reducing unnecessary use of antipsychotic medications in nursing homes*. Retrieved from http://www.cms.gov/Outreach-and-Education/Outreach/NPC/Downloads/2013-01-31-Dementia-Care-presentation.pdf.

Cohen-Mansfield, J., Dakheel-Ali, M., & Marx, M. S. (2009). Engagement in persons with dementia: The concept and its measurement. *American Journal of Geriatric Psychiatry*, *17*(4), 299–307.

Costa, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO personality inventory. *Personality and Individual Differences*, *12*(9), 887–898.

Costa, P. T. Jr., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, *13*(6), 653–665.

Engelman, K. K., Altus, D. E., & Mathews, R. M. (1999). Increasing engagement in daily activities by older adults with dementia. *Journal of Applied Behavior Analysis*, *32*(1), 107–110.

Ferrans, C. E. (2005). Definitions and conceptual models of quality of life. In J. Lipscomb, C. C. Gotay, & C. Snyder (Eds.), *Outcomes assessment in cancer: Measures, methods, and applications*. (pp. 14–30). New York, NY: Cambridge University Press.

Fleming, R., Goodenough, B., Low, L.-F., Chenoweth, L., & Brodaty, H. (2014). The relationship between the quality of the built environment and the quality of life of people with dementia in residential care. *Dementia*, *15*(4), 663–680.

Flynn, L., Liang, Y., Dickson, G. L., & Aiken, L. H. (2010). Effects of nursing practice environments on quality outcomes in nursing homes. *Journal of the American Geriatrics Society*, *58*(12), 2401–2406.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state." A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, *12*(3), 189–198.

Garcia, L. J., Hébert, M., Kozak, J., Sénécal, I., Slaughter, S. E., Aminzadeh, F., ... Eliasziw, M. (2012). Perceptions of family and staff on the role of the environment in long-term care homes for people with dementia. *International Psychogeriatrics*, *24*(5), 753–765.

Garre-Olmo, J., López-Pousa, S., Turon-Estrada, A., Juvinyà, D., Ballester, D., & Vilalta-Franch, J. (2012). Environmental determinants of quality of life in nursing home residents with severe dementia. *Journal of the American Geriatrics Society*, *60*(7), 1230–1236.

Goldstein, H., & McDonald, R. (1988). A general model for the analysis of multilevel data. *Psychometrika*, *53*(4), 455–467.

Jacomb, P. A., & Jorm, A. F. (1996). Personality change in dementia of the Alzheimer type. *International Journal of Geriatric Psychiatry*, *11*(3), 201–207.

Kolanowski, A. M., Litaker, M. S., & Catalano, P. A. (2002). Emotional well-being in a person with dementia. *Western Journal of Nursing Research*, *24*(1), 28–43.

Kurz, X., Scuvee-Moreau, J., Vernooij-Dassen, M., & Dresse, A. (2003). Cognitive impairment, dementia and quality of life in patients and caregivers. *Acta Neurologica Belgica*, *103*(1), 24–34.

Lawton, M. P., & Nahenow, L. (1973). Ecology and the aging process. In C. Eisdorfer, & M. P. Lawton (Eds.), *The psychology of adult development and aging*. (pp. 619–674). Washington, DC: American Psychological Association.

LeDoux, J. E. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. New York, NY: Simon & Schuster.

Lee, K. H., Algase, D. L., & McConnell, E. S. (2013). Daytime observed emotional expressions of people with dementia. *Nursing Research*, *62*(4), 218–225.

Miller, M. D., Paradis, C. F., Houck, P. R., Mazumdar, S., Stack, J. A., Rifai, A. H., ... Reynolds, C. F. III. (1992). Rating chronic medical illness burden in geropsychiatric practice and research: Application of the Cumulative Illness Rating Scale. *Psychiatry Research*, *41*(3), 237–248.

Molica R., H. A., & Ujvari, K. (2012). *Assisted living and residential care in the States in 2010*. Retrieved from http://www.aarp.org/content/dam/aarp/research/public_policy_institute/ltc/2012/residential-care-insight-on-the-issues-july-2012-AARP-ppi-ltc.pdf

Ng, W. (2009). Clarifying the relation between neuroticism and positive emotions. *Personality and Individual Differences*, *47*(1), 69–72.

Ng, W. (2012). Neuroticism and well-being? Let's work on the positive rather than negative aspects. *Journal of Positive Psychology*, *7*(5), 416–426.

Orsulic-Jeras, S., Judge, K. S., & Camp, C. J. (2000). Montessori-based activities for long-term care residents with advanced dementia: Effects on engagement and affect. *Gerontologist*, *40*(1), 107–111.

Pankesepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York, NY: Oxford University Press.

Parmelee, P. A., Thuras, P. D., Katz, I. R., & Lawton, M. P. (1995). Validation of the Cumulative Illness Rating Scale in a geriatric residential population. *Journal of the American Geriatrics Society*, *43*(2), 130–137.

Roberts, B. L., & Algase, D. L. (1988). Victims of Alzheimer's disease and the environment. *Nursing Clinics of North America*, *23*(1), 83–93.

Sifton, C. B. (2001). Making dollars and sense: The cost-effectiveness of psychosocial therapeutic treatment. *Alzheimer's Care Today*, *2*(4), 81–86.

Szanton, S. L., Thorpe, R. J., Boyd, C., Tanner, E. K., Leff, B., Agree, E., ... Gitlin, L. N. (2011). Community aging in place, advancing better living for elders: A bio-behavioral-environmental intervention to improve function and health-related quality of life in disabled older adults. *Journal of the American Geriatrics Society*, *59*(12), 2314–2320.

Verbeek, H., Zwakhalen, S. M. G., van Rossum, E., Ambergen, T., Kempen, G. I. J. M., & Hamers, J. P. H. (2014). Effects of small-scale, home-like facilities in dementia care on residents' behavior, and use of physical restraints and psychotropic drugs: A quasi-experimental study. *International Psychogeriatrics*, *26*(04), 657–668.

Vogelpohl, T. S., & Beck, C. K. (1997). Affective responses to behavioral interventions. *Seminars in Clinical Neuropsychiatry*, *2*(2), 102–112.

Wang, H. X., Karp, A., Herlitz, A., Crowe, M., Kåreholt, I., Winblad, B., & Fratiglioni, L. (2009). Personality and lifestyle in relation to dementia incidence. *Neurology*, *72*(3), 253–259.

Whall, A. L., Colling, K. B., Kolanowski, A., Kim, H., Son Hong, G.-R., DeCicco, B., ... Beck, C. (2008). Factors associated with aggressive behavior among nursing home residents with dementia. *Gerontologist*, *48*(6), 721–731.

Yao, L. & Algase, D. (2006). Environmental ambiance as a new window on wandering. *Western Journal of Nursing Research*, *28*, 89–104.

Zajonc, R. B. (1980). Feeling and thinking preferences need no inferences. *American Psychologist*, *35*, 151–175.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

CE

A Systematic Review on the Effectiveness of Interventions to Improve Hand Hygiene Compliance of Nurses in the Hospital Setting

Olena Doronina RN[1], Denise Jones, RN[1], Marianna Martello, RN[1], Alain Biron, RN, PhD[2], & Mélanie Lavoie-Tremblay, RN, PhD[3]

1 Masters Candidate, Ingram School of Nursing, McGill University, McGill University Health Centre, Montreal, QC, Canada
2 Assistant to the Director, Quality, Patient Safety, and Performance McGill University Health Centre, Montreal, QC, Canada
3 Associate Professor, Ingram School of Nursing, McGill University, McGill University Health Centre, Montreal, QC, Canada

Key words
Hand hygiene compliance, hospital setting, nurses, systematic review

Correspondence Dr. Mélanie Lavoie-Tremblay, Ingram School of Nursing McGill University, McGill University Health Centre, 3506 University Street, Wilson Hall, Room 205, Montreal, QC, Canada, H3A 2A7. E-mail: melanie.lavoie-tremblay@mcgill.ca

Accepted October 30, 2016

doi: 10.1111/jnu.12274

Abstract

Purpose: The purpose of the present systematic review is to identify the interventions that improve hand hygiene compliance (HHC) specifically among nurses.

Methods: A systematic review was performed guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses to evaluate the short and long-term effects of interventions to promote hand hygiene practices among nurses in the hospital setting. A search of the Cumulative Index to Nursing and Allied Health Literature, Medline Global Health, and Embase was conducted in addition to studies identified by the most recent systematic review. Six studies met inclusion criteria: three randomized controlled trials (RCTs), one controlled before and after studies (CBAs), and two interrupted times series (ITS).

Findings: One RCT reported effectiveness and 6-month sustainability of the effect related to multimodal-directed and multimodal with team leadership–directed strategies. The other two RCTs found positive effect of education and feedback on compliance; however, compliance rates declined after 1 month. Education was also found to improve HHC up to 3 months postintervention. An electronic reminder and feedback system evaluated by an ITS improved HHC and detected variation in HHC through the day.

Conclusions: This review showed that single and combined interventions do improve hand hygiene practices among nurses; however, there is a need for more methodologically robust studies to define the most effective and sustainable interventions.

Clinical Relevance: Although hand hygiene is the most effective measure to prevent healthcare-associated infections, compliance with hand hygiene remains low. Nurses are among the healthcare providers who spend the most time in direct patient contact. Therefore, there is a need for research to identify the interventions that improve HHC in this group.

The hospital is a setting where people come to receive treatment for their illnesses and to get well, but many patients develop infections that they did not have prior to admission. More than 200,000 Canadians acquire a healthcare-associated infection (HAI) each year and, as a result, 8,000 among them die (Public Health Agency of Canada, 2013). In the United States, the costs associated with the five most frequent HAIs were estimated to

be as high as US$9.8 billion yearly (Zimlichman et al., 2013). Although hand hygiene is considered to be the most effective strategy to reduce the rates of HAIs, compliance rates remain inadequate (Luangasanatip et al., 2015). This has major repercussions on patient outcomes, including increased length of stay, morbidity, and mortality, and it has a financial impact on the healthcare system (Kwon, Olsen, Dubberke, 2015; Levchenko, Boscart, & Fernie, 2011).

Since 2001, three major systematic reviews have been published on the effectiveness of interventions to improve hand hygiene compliance (HHC) among healthcare workers (HCWs). HHC is defined as performing hand hygiene when there is a recommended indication or opportunity (Shekelle et al., 2013). A 2010 Cochrane systematic review, which was an update of a 2007 review, found that there was insufficient evidence of interventions to improve hand hygiene in the hospital setting (Gould, Moralejo, Drey, & Chudleigh, 2010). Recently, Luangasanatip et al. (2015) conducted a systematic review and meta-analysis to evaluate the relative efficacy of the World Health Organization 2005 campaign (WHO-5) and other interventions to promote HHC among HCWs in the hospital setting and summarized associated information related to use of resources. They reviewed 41 studies published up to February 2014 and focused on randomized trials and high-quality nonrandomized studies. The reviewers concluded that promotion of hand hygiene with WHO-5 is effective at increasing compliance in healthcare workers; however, there is potential for further improvements that can be made with the addition of goal setting, reward incentives, and accountability.

The last three systematic reviews published on this topic did not report analyses or conclusions based on the type of HCW. This information is important to know when designing interventions to improve compliance since several studies have reported differences in compliance rates related to the type of HCW (Mayon-White, Ducel, Kereselidze, & Tikomirov, 1988; Sharma, Sharma, & Koushal, 2012; Shekelle et al., 2013). Moreover, some studies have indicated that cultural norms play a role in compliance rates of HCWs (Barrett & Randle, 2008).

Nurses are among the healthcare providers who spend the majority of their time in direct patient contact and thus have greater opportunities to perform hand hygiene (Sharma et al., 2012). There is a need to report on interventions to promote HHC among nurses in the hospital setting. Therefore, given the limited data related to nurses this knowledge synthesis in the format of a systematic review was conducted. This systematic review sought to determine what are the short- and long-term effects of interventions to improve HHC among nurses in the hospital setting.

Methods

Inclusion and Exclusion Criteria

Type of studies. Studies were restricted to randomized controlled trials (RCTs), controlled before and after studies (CBAs), and interrupted times series (ITS) that investigated the effectiveness of interventions to improve HHC in the acute care setting. Recommendations from the Cochrane Effective Practice and Organization of Care Group (EPOC) for study design characteristics were applied. For an interrupted time series to be included in this review, the duration of the intervention had to be clearly specified and there must have been a minimum of three data collection points at baseline and at least nine at the end of the intervention.

Studies focusing on the compliance of healthcare providers in general were included if they included statistical analysis specific to nurses. Interventions for nurses in the operating room were excluded because of this environment's specificity with regards to hand hygiene practices. Studies with students were also excluded. Only reports in English were included in this review.

Type of participants. The population of interest was nursing personnel, which included registered nurses both bachelor and college educated, advanced practice and licensed practical nurses, nursing assistants, and patient care attendants. In the text, nursing personnel are referred to as "nurses."

Type of interventions. Interventions consisting of any strategy targeting promotion of hand washing in the hospital setting were considered. The intervention could be targeting exclusively HHC or include it as one of its elements. Single- or multifaceted programs including but not limited to education, system change, feedback, workplace reminders, and strategies to improve institutional safety climate, infection control, or universal precautions were included; however, if it was indicated that direct observation was the only intervention, then it was excluded. Studies carried out in a simulated environment or outside of the hospital setting were excluded.

Type of outcome measures. Studies reporting a wide range of criteria for evaluating an intervention's effect on HHC were considered. Trials that indicated direct or unobtrusive observation, electronic monitoring, or video recording to measure HHC rates were eligible for review. Unobtrusive observation is considered to be the best method to evaluate HHC because direct observation is associated with a higher risk of having a Hawthorne effect—the risk of participants altering their behavior due

to knowledge of being observed (Huis et al., 2013). Proxy indicators of hand washing rates, such as the amount of hand sanitizer used before and after the intervention, were also eligible for inclusion. Studies that measured HHC based on self-report were excluded because of the tendency to have an inaccurate perception of one's own rates of HHC (Gould et al., 2010).

Information sources. The most recently published systematic review by Luangasanatip et al. (2015), on interventions to improve HHC among healthcare workers, was used as the starting point. Their review included research published up to February 2014. In addition to searches in electronic databases, studies included in the review by Luangasanatip et al. (2015) that provided well-defined data related to nurses were included.

Search strategy. A two-stage search strategy was used. Firstly, seven studies identified by Luangasanatip et al. (2015) as trials to improve HHC in nursing personnel were included. Secondly, the following electronic databases were searched: Cochrane central register of controlled trials, Medline, Embase, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Search terms were related to the research question and included terms such as hand washing, hand hygiene, hand clean, and hand decontaminate in combinations with nurse and nursing staff. Luangasanatip et al.'s (2015) review included studies published up to February 2014; thus, the search period for this review was from February 2014 to present in order to include newer studies. Four hundred thirteen articles were identified (Medline $n = 63$, CINAHL $n = 100$, Global Health $n = 37$, Embase $n = 213$) and yielded 303 articles after the removal of duplicates.

Three reviewers screened the titles and abstracts of the citations obtained from the search to assess the eligibility based on inclusion and exclusion criteria. Disagreements were resolved by discussion until a consensus was reached. The data set for the second screening was arbitrated by the research advising team. Four studies were identified by the electronic search and underwent a second screening.

Data extraction process. Eleven studies were identified as eligible for a second screening. Full texts were independently reviewed by two researchers. Data were reviewed by the research team and seven studies were deemed eligible for inclusion. One study that was initially eligible for inclusion was a short conference report that did not explicitly state if nurses were the main participants. To clarify this ambiguity, an email was sent to the authors to obtain the full text; however, they did not respond. Therefore, this study was excluded from the review.

Assessment of risk of bias in included studies. To ascertain the internal and external validity of selected studies, criteria for EPOC bias assessment for RCTs and ITS studies were used. The assessment of bias for RCTs was based on the following criteria: evaluation of random sequence and allocation concealment, blinding of participants and investigators, control of covariance by baseline outcome and group characteristics measurements, cross-contamination between control and experimental groups, selective reporting, and addressing incomplete data or attrition rates by researchers. For the assessment of bias for ITS study designs, the following aspects were evaluated: control for other changes occurring along with intervention, coherence of effect analysis with the intervention point, addressing the intervention effect on data collection, allocation concealment, addressing incomplete data, and selective outcomes reporting.

Results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement for reporting systematic reviews and meta-analyses of studies was used as a guideline (Liberati et al., 2009; Tacconelli, 2010).

Results of the Search

A total of six articles were included in the final data set for this review (see **Figure 1** for a detailed flow chart). Among these six studies, only one was obtained from the database search and the remaining five were from the review conducted by Luangasanatip et al. (2015). Accuracy of data was independently verified for discrepancies by all three reviewers.

Overall Description of Results

Two studies evaluated single-component interventions such as education or training related to hand hygiene (Gould & Chamberlain, 1997; Huang et al., 2002); universal precautions and epidemiology were often included in these trainings. Two studies combined education with other strategies such as feedback and audits (Dubbert, Dolce, Richter, Miller, & Chapman, 1990; Salamati, Poursharifi, akbar Rahbarimanesh, Koochak, & Najafi, 2013). Dubbert et al. (1990) combined education with feedback in the form of audits and displayed results on a poster, while Salamati et al. (2013) compared education alone with education in combination with motivational interviewing. Radhakrishna and colleagues (2015) evaluated

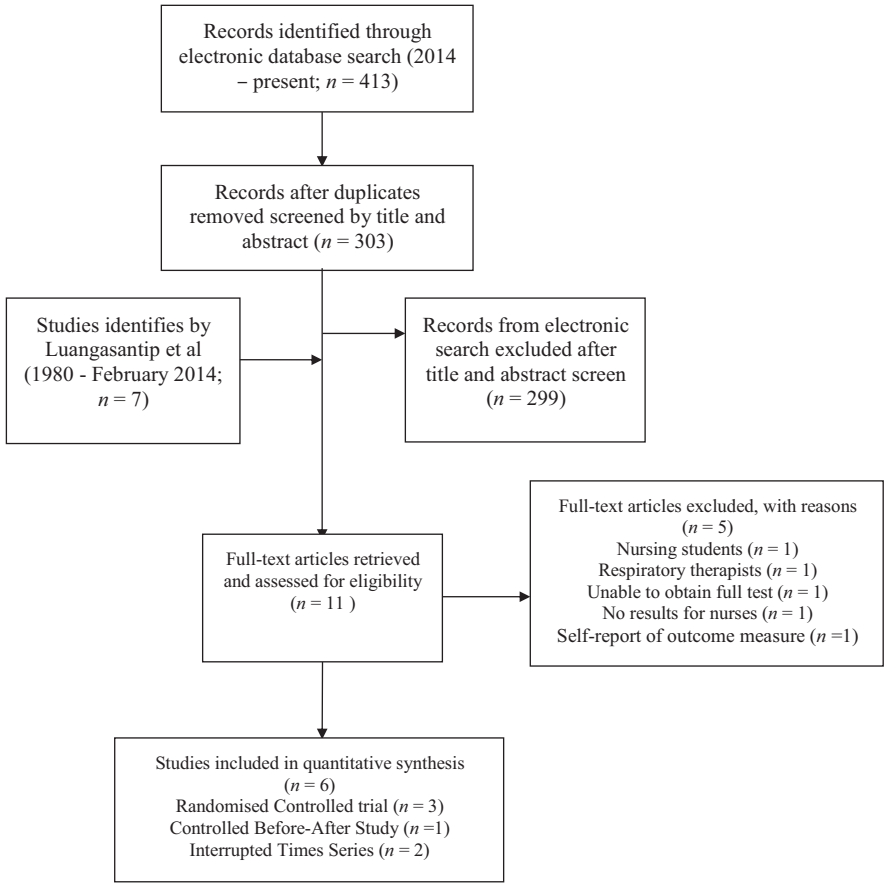

Figure 1. PRISMA flow chart.

the effect of feedback and electronic reminders on HHC. The study conducted by Huis et al. (2013) involved multidimensional strategies including a combination of interventions such as educational training, feedback, reminders, product availability, the addition of incentives, accountability, goal setting, and the involvement of unit leaders.

Table 1 provides a brief summary of the results from the 6 studies included in this review. Studies and effects of interventions are detailed in the ensuing text, and they are organized based on the research method that was used by the research team (two ITS, one CBA, and three RCTs).

Interrupted Times Series

Dubbert et al. (1990). In their ITS, Dubbert et al. (1990) conducted a study in a 12-bed intensive care unit (ICU) where data were recorded for 18 nurses. Baseline measurements were obtained by direct observation, and nursing staff was informed that observers were recording whether hand hygiene occurred after patient contact or a critical procedure. The observers were two individuals trained by the infection control nurse (ICN), who were present on the unit between 8 A.M. and 9 A.M. each weekday, as this was deemed to be the period when most nurses on duty had patient contact. No details about inter-rater reliability were provided.

After 6 weeks of baseline observations, two 4-week interventions were introduced. The first was a series of four 15-min classes taught within a 1-week period by the ICN. The class reviewed critical procedures that require hand washing and the rationale for hand washing after contact with patients. Four weeks after the first intervention, the second one was introduced. It involved providing feedback in the form of a poster revealing results of audits conducted on HHC. The feedback included specific information about the nature of any errors involving critical procedures, but did not identify individual subjects.

The unit of analysis was the nurse and the outcome measure was the percentage of HHC after patient contact and critical procedures. This study reported that after the educational training session, HHC increased from 81% to 94% but declined after 3 weeks; however, after the

Table 1. Summary of Results of Included Studies

Study	Study design	Intervention	Measurement period	Comparisons	Main effect: hand hygiene	Notes
Dubbert et al., 1990	ITS	Education + Feedback	Baseline: 6 weeks Intervention 1: 4 weeks Intervention 2: 4 weeks	None	Baseline HHC: 81% 4 weeks after Intervention 1: 86% 4 weeks after Intervention 2: 92%	After educational interventions HH compliance increased to 94% and then declined in 3 weeks to baseline. The first week of feedback produced no apparent effect, but by the second feedback week, HW increased to 97% and stayed at that level for the remaining 2 weeks until the end of the study.
Radhakrishna et al., 2015	ITS	Visual feedback + Electronic reminder	5 months: November 2013 through April 2014 Postintervention observation period lasted 4 months to observe the sustainability of the effect of the intervention over time	None	A significant increase in HH was noted in the intervention arm. Median usage of hand sanitizer in experimental group = 9,250 mL Median usage of hand sanitizer in control group = 7, 035 mL A consistent increase in sanitizer use was observed in the intervention group both during and 4 months after the end of the intervention.	During the course of the study, hand sanitizer usage also increased among the HCWs in the control group, possibly due to the fact that nurses would be assigned to different beds between the intervention and control group throughout their work week.
Gould & Chamberlain, 1997	CBA	Education only	3 months	None	After the intervention, nurses in the experimental group performed 58.64% essential decontaminations compared to 64% for the control group. Regarding glove use there was no occasion when nurses failed to wear gloves when needed, or when expensive sterile gloves replaced nonsterile. No cases of unsafe handling of sharps were observed. Discussion: There is still room for improving hand decontamination technique.	Started with a sample size $n = 25$ for intervention group and ended with $n = 16$. Control group also started with sample size $n = 25$ but ended with $n = 15$, therefore not enough power to detect a significant difference. All of the planned sessions were not given.

Continued

Table 1. *Continued*

Study	Study design	Intervention	Measurement period	Comparisons	Main effect: hand hygiene	Notes
Huis et al., 2013	Cluster RCT		Total: 13 months Baseline: 1 month Intervention: 6 months Follow-up (no intervention): 6 months September 2008 to November 2009	Control group received state-of-the-art strategy, which included education, reminders, feedback, and targeting adequate products and facilities. Experimental group received state-of-the-art strategy + interventions based on social influence and leadership	The compliance in the control group increased from 23% to 42% in the short term and to 46% in the long run. HHC in the experimental group improved from 20% to 53% in the short term and remained 53% in the long run.	Nurses were most compliant with HH indication after direct contact with the patient and after leaving the room of a patient in contact isolation. The compliance was consistently lowest before an aseptic task and from a dirty to a clean part of the body. The largest increase in compliance after implementation of both strategies was seen "after contact with patient surroundings."
Huang et al., 2002	RCT	Education only	Intervention: 4 months (pre- and post-test) September 2000 to January 2001	None	The experimental group reported washing hands before patient contact and not recapping needles significantly more often 4 months after the intervention compared to baseline. HHC for experimental group before patient contact increased from 51% to 86% and after patient contact increased from 75% to 91% postintervention.	
Salamati et al., 2013	RCT	Education + Feedback	Not specified	2-hr lecture given by an infection control nurse	Control group improved HHC of nursing personnel in 1st ($p = .002$) and 3rd groups ($p = .001$) Experimental group: improved HHC of personnel in 1st ($p < .001$) and 3rd ($p = .004$) groups. No significant difference between control and experimental group of Group 2 ($p = .366$)	Description of groups: 1st group: Nurses. Operating room technicians, anesthesiology technicians, and nursing assistants. 2nd group: Head nurses. 3rd group: Assistant nurse-aids.

Note. CBA = controlled before and after study; HCW = healthcare worker; HH = hand hygiene; HHC = hand hygiene compliance; HW = hand washing; ITS = interrupted time series; RCT = randomized controlled trial.

addition of the second strategy, HHC increased to 92% and this rate was maintained for 4 weeks.

Dubbert et al. (1990) addressed the possibility of the Hawthorne effect having an impact on the results by highlighting the fact that there was a high baseline rate of compliance (81%) compared to a baseline compliance rate of 63% in a study they previously conducted when staff was unaware that they were being observed (Mayer, Dubbert, Miller, Burkett, & Chapman, 1986). They did, however, comment on the fact that hand washing increased after educational training and feedback, so the results could not be solely attributed to staff's awareness of being observed.

Radhakrishna et al.'s (2015) ITS intervention focused on feedback and reminders. The aim was to determine if visual feedback and electronic reminders would increase the usage of hand sanitizer. They randomly assigned 24 beds in an open-layout ICU to the control or the intervention arm. Ten beds were assigned to the intervention arm and 14 beds were used as controls. The method of random allocation was not specified.

The intervention consisted of a hand hygiene system used to alert staff of an opportune moment for hand hygiene. The hand sanitizer unit with motion sensor was placed on the trolley in the intervention group that corresponded to the right-hand side of the patient. The HCW would carry a radiofrequency identification card, and whenever they approached the patient's bedside, the system would remind the HCW to perform hand hygiene by flashing a light that would illuminate the entire hand sanitizer dispenser. If the HCW did not perform hand hygiene, the hand sanitizer would continue to light up for an additional 10 s.

The outcome measure was the increase in the usage of hand sanitizer. Although a greater increase in the usage of hand sanitizer was found in the intervention group compared to the control group ($p < .05$), baseline measurements in both groups were not specified; however, a consistent increase in sanitizer use was observed in the intervention group 4 months after the end of the intervention demonstrating sustainability. The study reported that the behavioral change that caused an increase in the intervention arm was carried over to the control arm. This study also highlighted the decrease in the usage of hand sanitizer as the nurse's shift progressed.

Controlled Before and After Studies

Gould and Chamberlain (1997) conducted a CBA on four matched surgical wards in the same hospital to evaluate the effect of an educational intervention on HHC. Two wards were randomly assigned to the experimental group and the remaining two to the control group. The method of random allocation was not specified. There were 25 nurses assigned to each group. The nurses in the experimental group received an educational teaching session. Baseline data were collected for both groups by individually shadowing each nurse for 2 hr. The possibility of the Hawthorne effect was mentioned but assumed to have an unlikely effect due to the low baseline rate of compliance, and although the nurses knew they were being observed, they were not aware that moments and duration of hand washing were being measured.

In this study, Gould and Chamberlain (1997) had to cancel half of their teaching sessions because the wards were too busy, resulting in some of the nurses not being able to receive the entire content of the educational program. This study reported an increase in HHC from 54% to 58% after 3 months; however, these results may be skewed due to the fact that at the 3-month follow-up, the investigators were only able to obtain data from 31 nurses—16 in the experimental group and 15 controls. The sample size was therefore small and did not have adequate power for detecting a significant difference. The unit of analysis was the nurse and the outcome measure was the number of hand washing events after activities deemed to be high risk for cross-contamination.

Randomized Controlled Trials

In their RCT, Huang et al. (2002) conducted a study to evaluate the impact of an educational intervention on the rates of HHC. One hundred nurses were then randomized to either the control or the experimental group (method for random allocation was not specified). Data were collected using a behavior observation checklist completed by three nurse investigators prior to and 4 months after training. The investigators were also the observers and it was not specified if they were blinded to group allocation, and no inter-rater reliability testing was reported. The outcome measure was percentage rate of hand hygiene performed. After 4 months, this study reported that HHC in the experimental group increased from 51% to 86% before patient contact and from 75% to 91% after patient contact while the control group did not show a significant difference in behavior. These results demonstrate a short-term sustained effect; however, longitudinal sustainability is inconclusive. The possibility of a Hawthorne effect was not discussed, but if it existed, both groups would have been impacted.

The second RCT included in this review was conducted by Salamati et al. (2013), who investigated the effectiveness of education and motivational interviewing on rates of HHC. The researchers recruited 128 nurses and separated them into three classes based on job descriptions.

They were then randomly assigned to the control or the experimental group using the table of random numbers. Data from 64 nurses in each group were collected by observation; however, the nurses were unaware that they were being observed by an infection control supervisor. The same infection control supervisor observed each nurse from the control and experimental group. Interrater reliability was not discussed and there was no blinding in this study. The unit of analysis was the individual nurse and the outcome measure was HHC; however, it was not specified which moments for hand hygiene were being monitored. The researchers reported that education alone improved HHC rates of nursing personnel among the first and third classes in the control group, but a combination of interventions were shown to have a greater effect on HHC for the same classes in the experimental group ($p < .001$ for experimental group compared to $p = .013$ in control group). A significant improvement in rates of HHC for nurses in the second group with either method was not observed. This was attributed to the small sample.

Finally, Huis et al. (2013) conducted a cluster RCT in 67 nursing wards of three hospitals. Baseline data were collected prior to randomization. A computer-generated random procedure allocated the wards to either group (30 to the experimental group and 37 to the control group), and the student nurses, used as observers, were masked to cluster allocation. The intervention consisted of multimodal strategies that included involvement of unit leaders, and the effects were evaluated by comparing the post-strategy HHC rates with the baseline rates. The unit of analysis was the entire team of nurses and the outcome measure was the percentage of HHC. Using unobtrusive rather than direct observation controlled for the Hawthorne effect. The multimodal intervention combined with a team- and leaders-directed strategy showed an increase in HHC from 20% to 53% and remained at 53% 6 months postintervention. Random regression analysis was used to assess the impact of the intervention. The analysis showed a significant odds ratio of 1.64 in favor of the experimental group.

Risk of Bias Across the Studies

This review is subjected to a certain degree of publication bias since only English-language articles were included. Overall, there is a potential issue with generalizability in most of the studies included in this review due to the lack of explicit sample size power analysis. Only one study had a power analysis for sample size and a safe attrition margin (Huis et al., 2013).

Discussion

Overall, the results from this systematic review specific to nurses are similar to those of Luangasanatip et al. (2015). Multimodal, single-component, or dual interventions to improve HHC in nurses have all been demonstrated to be effective to some extent. High rates of HHC and longest sustainability were found with a multimodal and team leader–directed strategy that incorporated education, reminders, feedback, changes in facility layout, product availability, and the support of a team leader or manager (Huis et al., 2013). Other studies reported significant increases in HHC after the introduction of an educational intervention (Huang et al., 2002) as well as feedback combined with education (Dubbert et al., 1990; Salamati et al., 2013); however, only one study reported a sustained compliance (Dubbert et al., 1990). This suggests that individuals are not the only ones to be blamed for poor HHC; issues in the system may also be influential.

Theoretical as well as health interventions studies not specifically targeting HHC could be informative in improving sustainable HHC in nurses. For instance, a recent review highlighted a number of influential factors that help make audits and feedback effective in quality improvement interventions among healthcare professionals, such as low baseline performance or feedback coming from a supervisor or colleague that is provided more than once either verbally or written and that includes explicit goals and an action plan (Ivers et al., 2012). Research under the theory of planned behavior further suggests that individuals' intentions and perceived control are major predictors of behavioral change (e.g., Armitage & Conner, 2001; Godin & Kok, 1996). However, a number of social cognition theories (e.g., Ryan & Deci, 2000) suggest that effective behavioral changes occur primarily in motivated individuals.

Implications for Practice

Managers and healthcare providers should continue to promote HHC using the WHO-5 recommendations for performing hand washing, which include (a) before patient contact, (b) before an aseptic technique, (c) after exposure to bodily fluids, (d) after patient contact, and (e) after contact with a patient's surroundings. As described in the present review, HHC education, feedback and support from a team leader, accessibility, and visual reminders of hand hygiene are all elements that appear to increase HHC in nurses. Furthermore, as highlighted by Luangasanatip et al. (2015), it is important to add goal setting, reward incentives, and accountability for further improvements. Also, including a discussion within the

patient safety and HHC interventions about intentions, personal control, and motivation could be beneficial (Armitage & Conner, 2001; Godin & Kok, 1996; Ivers et al., 2012; Ryan & Deci, 2000).

Strengths and Limitations of the Study

A particular strength in this review is that it is the first one to report findings solely on nurses. This study also has several limitations. Firstly, studies varied in reporting and some failed to report randomization and blinding of participants and observers. Few studies provided long-term follow-up of at least 6 months. There is also a need for studies with robust methodological quality such as adequately powered RCTs. Also, each study measured HHC at different moments. Third, since direct observation is the main method for measuring HHC, the Hawthorne effect can lead to an increase and overestimation of compliance that cannot be directly attributed to the intervention. Finally, since only studies published in English were included, other relevant studies may have been missed.

Conclusions

Results are consistent with findings reported by Gould et al. (2010) and Luangasanatip et al. (2015) on interventions to improve HHC among HCWs. Single-component interventions were shown to improve HHC, but evidence showed sustainable and greater improvements with multimodal strategies in addition to goal setting, reward incentives, and accountability. However, there continues to be a need for future research to address low rates of HHC among nurses and other HCWs.

Acknowledgments

The authors thank Dr. Lisa Merry, Dr. Argerie Tsimicalis, Mrs. Angella Lambrou, and Dr. Geneviève Lavigne.

Clinical Resources

- World Health Organization. Five moments for hand hygiene: http://www.who.int/gpsc/tools/Five_moments/en/ http://www.who.int/gpsc/5may/Your_5_Moments_For_Hand_Hygiene_Poster.pdf

References

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, *40*(4), 471–499.

Barrett, R., & Randle, J. (2008). Hand hygiene practices: Nursing students' perceptions. *Journal of Clinical Nursing*, *17*(14), 1851–1857.

Dubbert, P. M., Dolce, J., Richter, W., Miller, M., & Chapman, S. (1990). Increasing ICU staff handwashing: Effects of education and group feedback. *Infection Control and Hospital Epidemiology*, *11*(4), 191–193.

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to health-related behaviors. *American Journal of Health Promotion*, *11*(2), 87–98.

Gould, D., & Chamberlain, A. (1997). The use of a ward-based educational teaching package to enhance nurses' compliance with infection control procedures. *Journal of Clinical Nursing*, *6*(1), 55–67.

Gould, D. J., Moralejo, D., Drey, N., & Chudleigh, J. H. (2010). Interventions to improve hand hygiene compliance in patient care. *Cochrane Database of Systematic Reviews*, issue 9, article no. CD005186.

Huang, J., Jiang, D., Wang, X., Liu, Y., Fennie, K., Burgess, J., & Williams, A. B. (2002). Changing knowledge, behavior, and practice related to universal precautions among hospital nurses in China. *Journal of Continuing Education in Nursing*, *33*, 217–224.

Huis, A., Schoonhoven, L., Grol, R., Donders, R., Hulscher, M., & van Achterberg, T. (2013). Impact of a team and leaders-directed strategy to improve nurses' adherence to hand hygiene guidelines: A cluster randomised trial. *International Journal of Nursing Studies*, *50*(4), 464–474.

Ivers, N., Jamtvedt, G., Flottorp, S., Young, J. M., Odgaard-Jensen, J., French, S. D., ... Oxman, A. D. (2012). Audit and feedback: Effects on professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*, issue 6, article no. CD000259.

Kwon, J. H., Olsen, M. A., & Dubberke, E. R. (2015). The morbidity, mortality, and costs associated with Clostridium difficile infection. *Infectious Disease Clinics of North America*, *29*(1), 123–134.

Levchenko, A. I., Boscart, V. M., & Fernie, G. R. (2011). The feasibility of an automated monitoring system to improve nurses' hand hygiene. *International Journal of Medical Informatics*, *80*(8), 596–603.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., ... Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Annals of Internal Medicine*, *151*(4), W65–W94.

Luangasanatip, N., Hongsuwan, M., Limmathurotsakul, D., Lubell, Y., Lee, A., Harbath, S., ... Cooper, B. (2015). Comparative efficacy of interventions to promote hand hygiene in hospital: Systematic review and network meta-analysis. *British Medical Journal*, *351*, 1–14.

Mayer, J. A., Dubbert, P. M., Miller, M., Burkett, P. A., & Chapman, S. W. (1986). Increasing handwashing in an intensive care unit. *Infection Control*, *7*(5), 259–262.

Mayon-White, R. T., Ducel, G., Kereselidze, T., & Tikomirov, E. (1988). An international survey of the prevalence of hospital-acquired infection. *Journal of Hospital Infection*, *11*, 43–48.

Public Health Agency of Canada. (2013). *Healthcare-associated infections, due diligence*. Retrieved from http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2013/infections-eng.php

Radhakrishna, K., Waghmare, A., Ekstrand, M., Raj, T., Selvam, S., Sreerama, S. M., & Sampath, S. (2015). Real-time feedback for improving compliance to hand sanitization among healthcare workers in an open layout ICU using radiofrequency identification. *Journal of Medical Systems*, *39*(6), 1–8.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78.

Salamati, P., Poursharifi, H., akbar Rahbarimanesh, A., Koochak, H. E., & Najafi, Z. (2013). Effectiveness of motivational interviewing in promoting hand hygiene of nursing personnel. *International Journal of Preventive Medicine*, *4*(4), 441–447.

Sharma, R., Sharma, M., & Koushal, V. (2012). Hand washing compliance among healthcare staff in intensive care unit (ICU) of a multispecialty hospital of North India. *Journal of Hospital Administration*, *1*(2), 27–33.

Shekelle, P. G., Wachter, R. M., Pronovost, P. J., Schoelles, K., McDonald, K. M., Dy, S. M., & Larkin, J. W. (2013). Making health care safer II: An updated critical analysis of the evidence for patient safety practices. *Evidence Report/Technology Assessment*, *211*, 1–945.

Tacconelli, E. (2010). Systematic reviews: CRD's guidance for undertaking reviews in health care. *Lancet Infectious Diseases*, *10*(4), 226.

Zimlichman, E., Henderson, D., Tamir, O., Franz, C., Song, P., Yamin, C. K., & Bates, D. W. (2013). Health care–associated infections: A meta-analysis of costs and financial impact on the US health care system. *JAMA Internal Medicine*, *173*(22), 2039–2046.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Cultural Sensitivity Among Clinical Nurses: A Descriptive Study

Medine Yilmaz, PhD, RN[1], Serap Toksoy, RN, MSc[2], Zübeyde Denizci Direk, RN, MSc[2], Selma Bezirgan, RN, MSc[2], & Münevver Boylu, RN, MSc[2]

1 Associate Professor, İzmir Katip Celebi University, Health Sciences Faculty, Nursing Department, İzmir, Turkey
2 Education Coordinator, İzmir South Secreteriat, İzmir, Turkey

Key words
Intercultural sensitivity, nursing education, transcultural nursing

Correspondence
Dr. Medine C. Yilmaz, Katip Celebi University, Health Sciences Faculty, Nursing Department, Cigli-IZMIR-TURKEY. E-mail: medine1974@hotmail.com

Accepted December 1, 2016

doi: 10.1111/jnu.12276

Abstract

Purpose: The purpose of this study was to investigate the cultural sensitivity of nurses working in rural and urban hospitals in Turkey.

Design and Methods: The sampling of this descriptive and correlational study was composed of only 516 clinical nurses working in inpatient clinics. The data collection tools were the Socio-Demographic Questionnaire and the Intercultural Sensitivity Scale.

Findings: A majority of the participating nurses experienced culture-related problems. Intercultural Sensitivity Scale results were partially high. The nurses had more problems in areas related to language barriers, patients' education level, and health perception about disease and religious beliefs when providing health care. Participants who were female, had an undergraduate or graduate education, had received in-service education on cultural care, or had taken transcultural nursing coursework obtained higher scores on the Intercultural Sensitivity Scale and its Interaction Engagement subscale. The cultural sensitivity level was 84.01 ± 9.1 (range = 43–107). The proportion of nurses who had received no in-service education was very high. They wanted to participate in an education program to gain better understanding of the culture of the society in which they lived.

Conclusions: The results of the present study demonstrated that nurses should be prepared in cultural sensitivity and cultural competence.

Clinical Relevance: Continuing education and formal courses on cultural sensitivity for nursing professionals are essential for optimal health outcomes. Thus, inequalities in health could be prevented and the quality of health care could be improved.

Economic and political living conditions in the increasingly globalized world have brought about interactions between people from different cultures. Global migration is a result of globalization. People migrate from rural areas to urban areas, from southern countries to northern countries, and from eastern countries to western countries not only due to factors such as marriage, education, employment, and economic conditions, but also due to wars, civil wars, ethnic or religious conflicts, poverty, or hopes of having better living conditions (Rechel, Mladovsky, Ingleby, Mackenbach, & McKee, 2013). Turkey, which received immigrants from Greece and Albania after the First World War, from Bulgaria in the 1980s, from Sarajevo-Bosnia in the 1990s, and from Ukraine, Georgia, Russia, and other areas after the collapse of the Soviet Union is currently receiving immigrants in large numbers from the Middle East (e.g., Syria, Iraq, and Lebanon) and Central Asia (e.g., Afghanistan). Of the 58,000 new immigrants to Turkey in 2014, 25,000 came from Syria and 12,000 came from Afghanistan (Ministry of Interior Directorate General of Migration Management, 2015). The immigrants who were given residence permits were from the following three countries: Syria, Azerbaijan, and the Russian

Federation (n = 16,722 persons; Ministry of Interior, General Directorate of Immigration, 2013).

Turkish society is a heterogeneous and multicultural society due to Turkey's geographical and geopolitical position. This heterogeneity stems from ethnic differences (Turko, Circassian, Kurds, Arabs, etc.), religious differences (Sunni, Alawi/Qizilbash, Arabian, Kurdi, Shafi, Hanafi, Christian, Jewish, etc.), and differences in place of residence (urban or rural). Islam is the religion of the majority of Turkish people. Islam attempts to regulate people's clothing styles, dietary patterns (banning the consumption of alcohol, shellfish, pork), ways of thinking (fatalism, belief that diseases come from God, refusal of health care given by the opposite sex, etc.), all of which affect their health. These cultural, religious, and ethnic differences affect the delivery and utilization of health services.

Global migration affects all aspects of life, including health, which leads to the emergence of different health problems. Local, national, and global migration may adversely affect access to and utilization of healthcare services, which brings about inequalities in health. However, it is important to create conditions for culturally different people to receive non-ethnocentric and culturally appropriate healthcare services. Provision of intercultural health care is a professional and moral responsibility and obligation for nurses both today and in the future (Douglas et al., 2011). Nurses who are aware that the values and behaviors of individuals are affected by their culture will evaluate the planning and delivery of health care within this context to improve the effectiveness of health care (Cerezo, Galceran, Soriano, & Moral, 2014; Kowalewski, Massen, & Mullins, 2010). Nurses need to develop an understanding of culture and its relationship to illnesses and health.

Background

A critical concept of culture studied by Fritz, Graf, Hentze, Mollenberg, and Chen (2005) noted that intercultural competence is an umbrella concept that subsumes intercultural sensitivity, intercultural awareness, and intercultural adroitness. These three elements reflect the affective, cognitive, and behavioral aspects of intercultural competence. Intercultural sensitivity is employing one's knowledge, consideration, understanding, respect, and adapting after realizing awareness of self and others (Chen & Young, 2012). Cultural sensitivity serves as a foundation for the development of cultural competence, and intercultural sensitivity is a component of cross-cultural communication skills (Chen & Young, 2012). According to Chen and Starosta (2000), intercultural sensitivity is composed of self-concept, open-mindedness, nonjudgmental attitudes, and social relaxation. These features enable an individual to display adequate sensitivity in the acceptance of cultural differences and respect for these differences during cultural interaction (Chen & Starosta, 2000; Chen & Young, 2012). Cultural sensitivity is very important in the provision of health services (Tucker, Arthur, Roncoroni, Wall, & Sanchez, 2015).

Nurses serve people from different cultural and ethnic backgrounds (Douglas et al., 2011). Nurses can face complex differences in patients' communication styles, and attitudes and beliefs towards health behaviors, languages, and ethnic origins (Cicolini et al., 2015; Goodman, Edge, Agazio, & Prue-Owens, 2014). A patient's cultural values, beliefs, and practices are an important part of holistic nursing care. Culturally adequate nursing care enables individuals to benefit from health services, and reduces inequalities in access to health services through the integration of the patient's cultural beliefs into patient care (Douglas et al., 2011, 2014).

Good nursing care requires providers of holistic care to establish good communication; to show affection, sympathy, and empathy; and to respect others' views without stigmatizing or insulting them while providing health care. The International Council of Nurses (ICN) Code of Ethics states that the need for nursing is universal, and that nursing is based on respect for human life and human rights, regardless of nationality, language, religion, gender, age, political opinion, and social status (ICN, 2012). Likewise, in the "Guidelines for Implementing Culturally Competent Nursing Care" prepared by Douglas et al. (2014), it is stated that nurses shall gain an understanding of the perspectives, traditions, values, practices, and family systems of culturally diverse individuals, families, communities, and populations they care for, as well as knowledge of the complex variables that affect the achievement of health and well-being.

In recent years, nurses in Turkey have begun to have patients from different cultures and provide care for them. However, intercultural sensitivity has not been understood or studied adequately. Studies on how nurses perceive cultural sensitivity are limited. The purpose of this study was to investigate the cultural sensitivity of nurses working in rural and urban hospitals affiliated with the South Secretariat of Public Hospitals.

Research questions were as follows:

- Do socio-demographic variables such as gender, age, level of education, duration of work experience, and place of residence affect the intercultural sensitivity of nurses?
- Is there a significant difference between intercultural sensitivity levels of nurses in terms of the courses and

in-service education on transcultural nursing care they take?
- Do nurses' intercultural sensitivity levels vary in terms of the ways they observe traditional/ethnic applications?

Method

Study Design and Sampling

Turkey consists of seven geographical regions and 81 provinces. The province where the study was carried out is a 30-district metropolitan city located in the western-most part of Turkey and receives intense immigration from all parts of Turkey. The population of the province rose from 4,005,459 in 2012 to 4,113,072 in 2014. The net migration rate in this province was 0.56% between 2013 and 2014, 0.25% between 2012 and 2013, and 0.35% between 2011 and 2012. The number of Syrians immigrating to the districts of this province in the past 3 years is around 150,000 (Ministry of Interior, General Directorate of Immigration, 2013). The Turkish government offers free health care to these patients in all hospitals.

The population of this descriptive-correlational study was composed of only clinical nurses working in the inpatient clinics of 10 hospitals (5 urban, 5 rural) affiliated with the South Secretariat of Public Hospitals. The entire population of employed nurses in these 10 rural and urban hospitals (738 nurses) was included, and the non-probability sampling method was implemented to reach them. All nurses worked in inpatient clinics. Most of the sample worked one of two shifts (from 8 a.m. to 4 p.m., or from 4 p.m. to 8 a.m.). The study was completed with 516 nurses (participation rate: 69.9%). Thirty-six questionnaires that were not appropriately completed were eliminated. Nurses who did not agree to participate in the study or who were on leave at the time of the study were not interviewed. The study data were collected between January 2, 2015 and March 1, 2015.

Data Collection

The data were collected using the Socio-Demographic Questionnaire developed by the researchers and the Intercultural Sensitivity Scale (ISS) developed by Chen and Starosta (2000).

Socio-Demographic Questionnaire. The questionnaire was developed by the researchers in line with the pertinent literature and similar studies. The questionnaire consists of 17 items questioning nurses' socio-demographic characteristics, such as education status and residential area, and their cultural characteristics such as having taken transcultural nursing courses and received in-service education (yes or no), observation of ethnic or traditional applications during nursing interventions (open-ended), the frequency of these nursing interventions, and challenges they face while providing health care (open-ended). Three experts were consulted to obtain their views on the questionnaire and to establish the reliability of the questionnaire. In line with their recommendations, some statements were changed, and the questionnaire took its final form. A pilot study was conducted with 15 nurses.

Intercultural Sensitivity Scale. The ISS was developed by Chen and Starosta (2000). The adaption of the scale into Turkish was conducted by Bulduk, Tosun, and Ard⌞ş (2011) with nurses. Bulduk et al. calculated the Cronbach alpha value of the scale as 0.90. The Cronbach alpha value was calculated as 0.80 in the present study. The scale consists of 24 items and 5 subscales. These subscales are as follows:

- Interaction Engagement, seven items,
- Respect for Cultural Differences, six items,
- Interaction Confidence, five items,
- Interaction Enjoyment, three items
- Interaction Attentiveness, three items.

The items are rated on a 5-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The scale has no cutoff point. The higher the score, the higher the cultural sensitivity (Chang, Yang, & Kuo, 2013).

Data Collection Process

Before the data collection process, the nurses were informed about the aim of the study. Data collection tools were handed out to the nurses in the sample. Data were collected by the paper-and-pencil technique. Data collection was carried out within the working hours of the nurses (between 8 a.m. and 4 p.m.). It took about 15 min to fill out all the data forms.

Ethical Considerations

Before the study was conducted, necessary permissions were obtained from the Noninterventional Clinical Research Ethics Committee (No. 290, 18/12/2014) and the hospitals where the study was to be conducted. After the nurses participating in the study were informed of the purpose of the study, their written consents were obtained. They were asked not to write any personally identifiable information on the questionnaire. There was anonymity of the participants to the researchers.

Table 1. Socio-Demographic Characteristics of Nurses ($N = 516$)

Characteristics	*n*	%
Age (mean years ± *SD*)	36.7 ± 7.4	
Gender		
Female	456	88.4
Male	60	11.6
Education		
High school	83	16.1
Associate	180	34.8
Baccalaureate (registered nurse)	215	41.6
Master's degree	39	7.5
Years of work experience		
<10	148	28.7
10–20	203	39.3
<20	165	32.0
Spent life in districts		
Village	35	6.7
Town	318	61.8
City	93	18.1
Metropolitan	69	13.4
Total	200	100

Table 2. Distribution of Problems/Difficulties During Caregiving

Problems/difficulties	*n*[a]	%
Does not know language	235	46.7
Education (low level)	215	42.7
Health perception of patient	142	28.2
Age (older)	98	19.5
Religious	87	17.3
Fatalism	76	15.1
Gender (male)	65	12.9
Belief about medical treatment	52	10.3
Income (low)	28	5.6
All	83	16.5

[a]Multiple answers.

Statistical Analysis

The data were analyzed using the Statistical Packages for the Social Sciences software package (IBM Corp, Armonk, NY, USA). To analyze the data, numbers, percentage distributions, arithmetic mean, chi-square, t-test, and analysis of variance were used. Values of $<.05$ were considered statistically significant. Education was classified as high school (3-year diploma), associate degree programs (2-year diploma), baccalaureate (registered nurse), and master's degree. The places where the nurses lived were classified as metropolis, city, district, or village based on the results of the formal population census (metropolis = population of >750,000; city = population of 100,000–750,000; district = population of 50,000–100,000; village = population of <50,000).

Results

The mean age of the nurses was 36.7 ± 7.4 years. Of them, 88.4% were female, 41.6% had a bachelor's degree, and 39.3% had a working experience ranging from 10 to 20 years. Of the nurses, 61.8% spent their lives in districts and 88.1% of nurses spent most of their working lives in districts (**Table 1**). All the participating nurses reported that they had looked after patients from different cultures in the past year. While 2.1% of nurses reported that one of every two of their patients was from a different culture, 2.1% reported that one of every three patients was from a different culture, and 95.8% reported that one of every six patients was from a different culture. While 87.6% of the participating nurses believed that there was a relationship between the culture and nursing, 92.4% believed that communication between nurses and the patient was affected by the patient's culture during the interventions they performed. A majority of the participating nurses (85.5%) believed that being knowledgeable of the culture of the patient would affect the treatment and care they provided. Almost three fourths of the participants (71.4%) stated that they were knowledgeable about the traditions related to death and dying persons in the society in which they lived. Of the participants, 15.2% had taken courses on transcultural nursing during their formal education, and 34.4% had received in-service education and on-the-job education on the provision of cultural care, whereas 65.6% had received no education on the subject. Of the participants, 56.2% stated that they wished to participate in an education program to be acquainted with the culture of the society in which they lived.

Of the participating nurses, 52.6% culturally assessed their patients as to whether they implemented traditional or ethnic health interventions such as using herbs, wearing good-luck charms, or visiting a tomb or an entombed saint considered to have positive effects on their health. Of these participants, 21.5% culturally assessed all the patients to whom they gave care, 36.4% culturally assessed the patients who displayed interesting behaviors, and 10.1% culturally assessed the patients if they had problems with the patient or the patient's relatives. However, 10.9% of the participants did not culturally assess any patients. An overwhelming majority of the participating nurses (97.5%) experienced culture-related problems with patients when providing health care. These problems were mostly in areas such as language (46.7%), education (42.7%), the patient's perception of health (28.2%), and religious beliefs and spirituality (17.3%; **Table 2**).

The mean score the nurses obtained on the ISS was 84.01 ± 9.1 (range = 43–107). The mean score was 25.4 ± 3.7 for the Interaction Engagement subscale,

Journal of Nursing Scholarship, 2017; 49:2, 153–161.

Table 3. Scores of Intercultural Sensitivity Scale and Subscales

Intercultural Sensitivity Scale	Mean ± *SD*	Range
Interaction Engagement (7 items)	25.4 ± 3.7	15–35
Respect for Cultural Differences (6 items)	23.4 ± 3.7	7–30
Interaction Confidence (5 items)	15.7 ± 1.8	7–21
Interaction Enjoyment (3 items)	11.5 ± 2.3	2–10
Interaction Attentiveness (3 items)	7.7 ± 1.5	4–15
Cultural Sensivity (24 items)	84.01 ± 9.1	43–107

23.4 ± 3.7 for the Respect for Cultural Differences subscale, 15.7 ± 1.8 for the Interaction Confidence subscale, 11.5 ± 2.3 for the Interaction Enjoyment subscale, and 7.7 ± 1.5 for the Interaction Attentiveness subscale (**Table 3**).

The mean score obtained by female participants on the Respect for Cultural Differences subscale was higher than that obtained by male participants. The mean scores the participants obtained on the ISS and its other subscales did not differ by gender. The comparison of the mean scores by education demonstrated that the participants who had undergraduate and graduate education obtained higher scores on the ISS and its Interaction Engagement subscale. The participants who graduated from university obtained higher scores on the Respect for Cultural Differences subscale than did the other participants. The participants living in a metropolis achieved higher mean scores on the ISS and its Interaction Engagement and Respect for Cultural Differences subscales than did those living in other settlements (**Table 4**).

Participants who had taken a transcultural nursing course obtained higher mean scores on the Respect for Cultural Differences subscale than did participants who had not taken such a course. Participants who had received in-service education on cultural care achieved higher mean scores on the ISS and its Respect for Cultural Differences subscale than did those who had not received such education (see **Table 4**).

The participating nurses who observed whether their patients implemented traditional or ethnic health interventions obtained higher mean scores on the ISS and its Respect for Cultural Differences, Interaction Attentiveness, and Interaction Enjoyment subscales than did those who did not observe their patients for these interventions (see **Table 4**).

Discussion

Studies related to transcultural nursing are generally related to cultural competence (Cicolini et al., 2015; Lin, Mastel-Smith, Alfred, & Lin, 2015; Schim & Doorenbos, 2010) and include samples of university nursing or medical students, and their sample sizes range between 43 and 350 both in national and international studies (Cerezo et al., 2014; Chang et al., 2013; Uzun & Sevinç, 2015). With its large sample size, the present study aimed at investigating intercultural sensitivity of nurses working as clinicians in the inpatient clinics of 10 hospitals is considered to fill the gap concerning intercultural sensitivity in the national and international literature, and to provide a resource for future studies.

Concept of transcultural nursing care has been come into question in Turkey since 2004 and now takes its place in many universities' nursing curricula. Many of the nurses observed had not taken transcultural nursing courses during their university education because most of them graduated from schools 10 or more years before the study was conducted, and universities' curricula in those years did not include transcultural nursing courses. However, nurses who were not able to take these courses in university education should have received education on the issue in their work lives. Considering this aspect, it can be said that within the scope of lifelong learning, only one third of nurses had received in-service education and on-the-job education related to the area in which they worked. The number of participating nurses who had received no in-service education was very high. Slightly more than half of the participating nurses stated that they wanted to participate in an education program to get a better understanding of the culture of the society in which they lived. If undergraduate nursing programs are to be culturally sensitive in preparing nurses for the future and are to meet the needs of individuals with different cultural backgrounds, curricula and interventions should be available that serve this purpose (Jeffreys & Dogan, 2012; Meydanlioglu, Arikan, & Gozum, 2015).

It is important for nurses to raise their awareness of issues such as communication, nutrition, and cultural beliefs of people to whom they give care and to be culturally competent if they are to improve optimal health outcomes and quality of life (Goodman et al., 2014). Although the participants believed that there was a relationship between culture and nursing, that the patient's culture affects the way he or she communicates, and that recognition of the patient's culture would affect the treatment and care provided, only half of them stated that they observed whether the patients resorted to traditional or ethnic practices that positively affect their health, and only one fifth of them observed all the patients to whom they gave care. These rates are low in terms of the provision of adequate cultural nursing care. On the other hand, although the number of participating nurses who observed their patients in terms of traditional or ethnic practices affecting their health was low, the mean scores they obtained on the ISS and its Interaction Enjoyment and Interaction Attentiveness subscales were

Table 4. Distribution of Intercultural Sensitivity Scale (ISS) and Subscales' Scores by Sociodemographic Characteristics

ISS and subscale characteristics	Interaction engagement		Respect for cultural differences	Interaction confidence	Interaction enjoyment	Interaction attentiveness	ISS
	n	$\chi \pm SS$	$\chi \pm SS$	$\chi \pm SS$	$\chi \pm SS$	$\chi \pm SS$	$\chi \pm SS$
Gender							
Female	456	25.4 ± 3.6	23.7 ± 3.6*	15.7 ± 1.8	7.7 ± 1.4	11.5 ± 2.2	84.1 ± 8.8
Male	60	25.7 ± 4.1	22.5 ± 4.2	15.7 ± 1.2	7.8 ± 1.8	11.4 ± 2.8	83.2 ± 11.0
Education							
High school	83	24.3 ± 3.7***	22.3 ± 4.0	16.0 ± 1.9	7.6 ± 1.6	11.03 ± 2.6	81.3 ± 9.7
Prelicensing	180	25.4 ± 3.7***	23.5 ± 3.6	15.6 ± 1.6	7.6 ± 1.5	11.4 ± 2.3	83.6 ± 9.1
Baccalaurate	215	25.6 ± 3.6	23.9 ± 3.5**	15.8 ± 1.8	7.9 ± 1.4	11.6 ± 2.2	84.9 ± 8.5***
Master's	38	27.4 ± 3.5	24.1 ± 3.7	15.6 ± 1.8	7.6 ± 1.6	12.1 ± 2.3	86.7 ± 9.6*
Living area							
Village	35	23.8 ± 3.9	22.5 ± 4.4	15.2 ± 2.3	7.4 ± 1.9	11.0 ± 2.5	80.1 ± 12.1
Town	318	25.4 ± 3.7	23.5 ± 3.4	15.7 ± 1.7	7.7 ± 1.5	11.6 ± 2.3	84.0 ± 8.6
City	93	25.5 ± 3.4	23.1 ± 3.9	15.8 ± 1.9	7.8 ± 1.4	11.3 ± 2.3	83.7 ± 8.6
Metropolitan	69	26.3 ± 3.7**	24.5 ± 3.8*	15.8 ± 1.6	8.0 ± 1.3	11.5 ± 2.6	86.3 ± 9.7**
In-service training related to culture							
No	336	25.6 ± 3.6	22.7 ± 3.9	15.7 ± 1.7	7.8 ± 1.5	11.5 ± 2.1	82.8 ± 9.8
Yes	176	25.2 ± 3.7	23.9 ± 3.5**	15.8 ± 1.9	7.7 ± 1.6	11.3 ± 2.7	84.6 ± 8.7*
Taking transcultural nursing course							
No	438	25.4 ± 3.7	22.6 ± 4.6	15.7 ± 1.7	7.7 ± 1.4	11.5 ± 2.3	83.1 ± 11.8
Yes	78	25.7 ± 3.7	23.7 ± 3.5*	15.8 ± 2.1	7.7 ± 1.9	11.2 ± 2.6	84.2 ± 8.5
Assessment/observation of traditional/ethnic practices							
No	20	24.1 ± 3.8	25.5 ± 3.7	15.8 ± 1.9	7.9 ± 1.6	10.1 ± 2.8	79.4 ± 9.1*
Yes	259	25.8 ± 3.6	21.4 ± 4.4	15.9 ± 1.6	7.9 ± 1.4*	11.7 ± 2.3	85.1 ± 9.1*
Partially	213	25.2 ± 3.7	23.5 ± 3.8	15.6 ± 1.8	7.5 ± 1.5*	11.3 ± 2.2	83.5 ± 8.8

Note. SS = Statistical significance. *Significant at the .05 level (two-tailed); **at the .01 level (two-tailed); ***at the .001 level (two-tailed).

Journal of Nursing Scholarship, 2017, 49:2, 153–161.

partially high. This probably stems from the fact that the nurses' observation of the patient's cultural background during healthcare provision affected their interaction enjoyment and interaction attentiveness.

In order to manage health care and to ensure its effectiveness, it is critical to recognize traditional practices (Weech-Maldonado et al., 2012). Lack of knowledge about cultural differences can lead to misunderstanding or not understanding the patient's needs (Alpers & Hanssen, 2014; Dias, Gama, Cargaleiro, & Martins, 2012; Goodman et al., 2014). Language difficulties and nurses' lack of knowledge about the patient's culture were a major barrier to the implementation of culturally sensitive practices (Henderson, Kendall, & See, 2011; Kawauchi, 2011). Goodman et al. (2014) determined that patients had problems because they did not comply with the diet recommended to them and were willing to consume local foods. In the present study, the nurses had more problems in areas related to language barriers, patients' education level (when low), health perception about disease, and religious beliefs. Unlike other studies in the literature, another problem faced by nurses in the present study was the gender of the patients. Until 2007, in Turkey, as in many countries, nursing was considered to be a woman's profession. After 2007, men also began to work as nurses. For religious reasons, there are circumstances in which a female nurse touching a male patient or a male nurse touching a female patient is not welcomed (particularly in obstetrics and gynecology, and in urology clinics). It has been reported that problems emerge between Iraqi patients and nurses due to cultural differences in communication, nutrition, gender-related beliefs, and values (Goodman et al., 2014). In studies conducted in different countries and societies, various socio-demographic characteristics of the patients and nurses' lack of knowledge are reported to be a barrier to cultural sensitivity. Nurses should engage in critical reflection of their own values, beliefs, and cultural heritage in order to have an awareness of how these qualities and issues can affect culturally congruent nursing care (Douglas et al., 2014).

As in another study (Uzun & Sevinç, 2015), no relationship was determined between socio-demographic characteristics and the ISS. Those participants who had undergraduate and graduate education achieved higher scores on the ISS and its Respect for Cultural Differences and Interaction Engagement subscales. In the literature, there are studies indicating that education is associated with cultural competence and cultural sensitivity (Uzun & Sevinç, 2015). Interaction attentiveness was associated with the nurses' level of education. Those participants who were residing in a metropolis achieved higher scores on the ISS and its Respect for Cultural Differences and Interaction Engagement subscales. This is thought to result from the contribution of metropolitan life to the views of an individual or society, and chances for nurses to have patients with different cultural backgrounds.

Knowledge and skills necessary for assuring that nursing care is culturally congruent should be included in global healthcare agendas that mandate formal education and clinical education, and ongoing continuing education should be required for all practicing nurses (Douglas et al., 2014; Meydanlioglu et al., 2015). The ICN (2012) supports the view that to ensure the development of nurses' cultural competence, education on cultural care should be given at all levels of nursing education. Some studies have shown a positive correlation between training course and cultural competence in nurses (Casillas, Paroz, Green, Wolff, & Bodenmann, 2013; Delgado et al., 2013; Jeffreys & Dogan, 2012; Weech-Maldonado et al., 2012). In the present study, those nurses who had taken transcultural nursing courses, who had participated in in-service education, and who had observed their patients in terms of traditional or ethnic practices affecting their health obtained higher scores on the Respect for Cultural Differences subscale. Those nurses who had participated in in-service education achieved higher scores on the ISS, which suggests that taking transcultural nursing courses and participating in in-service education positively affected intercultural sensitivity. In order to enable nurses to understand different cultures and to communicate with those from different cultures, they should be enabled to gain cross-cultural communication skills during their graduate education and life-long learning programs (Meydanlioglu et al., 2015).

The present study had some limitations. Although the study sample consisted of nurses working as caregivers in the inpatient clinics of 10 hospitals, only half of them participated in the study. It is thought that this low participation rate was due to the fear that their knowledge of cultural care would be disclosed.

Conclusions

The results of the present study showed that nurses should be prepared in cultural sensitivity and cultural competence. Although the results of the study cannot be generalized because it included only one city of a country receiving intense migration, they may attract the attention of nurses who deal with individuals with different cultural backgrounds all over the world. Even if they are in different regions and continents, countries all over the world receive immigrants from different communities, and these countries are rapidly becoming a more multicultural society with new ethnic and cultural groups. Healthcare organizations have to face complex differences in patients' communication styles, attitudes,

and different health beliefs of immigrants. Assessment of nurses' cultural sensitivity is of essential importance in countries experiencing demographic and social changes due to immigration. Continuing education and formal courses on cultural sensitivity and cultural competence are essential for optimal health outcomes in countries where ethnic and cultural diversity is growing. Culturally competent assessment skills are essential to facilitate communication, to attain respect for cultural differences, and to be able to ask critical questions about the patient's health beliefs and practices during the provision of health care. When nursing faculties develop creative and innovative strategies to promote cultural sensitivity, care to patients who are culturally diverse can be improved. For nursing students to enhance cultural sensitivity in vulnerable populations, the transcultural nursing curriculum should be improved to help nurses meet the needs of individuals from different cultural backgrounds, avoid potential cultural conflicts, and become culturally sensitive. In addition, through lifelong learning education, nurses should be enabled to gain information on institutional, social, economic, cultural, and language barriers. In this way, nurses will be able to examine the effects of the culture on health and diseases, and on self-care deficiencies, and be able to provide intercultural health care by considering the effects of cultural differences and similarities on health. Thus, inequalities in health could be prevented, the use of health services could be increased, and the quality of health care could be improved in a global community.

Clinical Resources

- Kowalewski, B., Massen, A., & Mullins, S. (2010). Cultural sensitivity training module: http://www.weber.edu/CommunityInvolvement/Mentoring_Tutoring.html
- Transcultural Nursing Society: http://www.tcns.org/publications.html

References

Alpers, L.-M., & Hanssen, I. (2014). Caring for ethnic minority patients: A mixed method study of nurses' self-assessment of cultural competency. *Nurse Education Today*, *34*(6), 999–1004.

Bulduk, S., Tosun, H., & Ard⌊ş, E. (2011). Türkçe kültürler aras⌊ duyarl⌊l⌊k ölçeğinin hemşirelik öğrencilerinde ölçümsel özellikleri [Measurement properties of Turkish Intercultural Sensitivity Scale among nursing students]. *Turkiye Klinikleri Journal of Medical Ethics-Law and History*, *19*(1), 25–31.

Casillas, A., Paroz, S., Green, A. R., Wolff, H., & Bodenmann, P. (2013). Comparing self-perceived cross-cultural skillfulness between physicians and nurses at a Swiss university hospital: Does provider role make a difference? *Journal of General Internal Medicine*, *28*, S50.

Cerezo, P. G., Galceran, M. S., Soriano, M. G., & Moral, J. L. (2014). Design and evaluation of an educational course in cultural competence for nursing. *Procedia-Social and Behavioral Sciences*, *132*, 262–268.

Chang, H.-Y., Yang, Y.-M., & Kuo, Y.-L. (2013). Cultural sensitivity and related factors among community health nurses. *Journal of Nursing Research*, *21*(1), 67–73.

Chen, G. M., & Starosta, W. J. (2000). The development and validation of the intercultural sensitivity scale. *Human Communication*, *3*, 1–15.

Chen, G. M., & Young, P. (2012). Intercultural communication competence. In A. Goodboy & K. Shultz (Eds.), *Introduction to communication: Translating scholarship into meaningful practice* (pp. 175–188). Dubuque, IA: Kendall-Hunt.

Cicolini, G., Della Pelle, C., Comparcini, D., Tomietto, M., Cerratti, F., Schim, S. M., . . . Simonetti, V. (2015). Cultural competence among Italian nurses: A multicentric survey. *Journal of Nursing Scholarship*, *47*(6), 536–543.

Delgado, D. A., Ness, S., Ferguson, K., Engstrom, P. L., Gannon, T. M., & Gillett, C. (2013). Cultural competence education for clinical staff measuring the effect of a one-hour class on cultural competence. *Journal of Transcultural Nursing*, *24*(2), 204–213.

Dias, S., Gama, A., Cargaleiro, H., & Martins, M. O. (2012). Health workers' attitudes toward immigrant patients: A cross-sectional survey in primary health care services. *Human Resources for Health*, *10*(1), 1.

Douglas, M. K., Pierce, J. U., Rosenkoetter, M., Pacquiao, D., Callister, L. C., Hattar-Pollara, M., . . . Purnell, L. (2011). Standards of practice for culturally competent nursing care: 2011 update. *Journal of Transcultural Nursing*, *22*(4), 317–333.

Douglas, M. K., Rosenkoetter, M., Pacquiao, D. F., Callister, L. C., Hattar-Pollara, M., Lauderdale, J., . . . Purnell, L. (2014). Guidelines for implementing culturally competent nursing care. *Journal of Transcultural Nursing*, *25*(2), 109–121. doi:10.1177/1043659614520998

Fritz, W., Graf, A., Hentze, J., Mollenberg, A., & Chen, G. M. (2005). An examination of Chen and Starosta's model of intercultural sensitivity in Germany and United States. *Intercultural Communication Studies*, *14*(1), 53–64.

Goodman, P., Edge, B., Agazio, J., & Prue-Owens, K. (2014). Cultural awareness nursing care of Iraqi patients. *Journal of Transcultural Nursing*, *26*(4), 395–401.

Henderson, S., Kendall, E., & See, L. (2011). The effectiveness of culturally appropriate interventions to manage or prevent chronic disease in culturally and linguistically diverse communities: A systematic literature review. *Health & Social Care in the Community*, *19*(3), 225–249.

International Council of Nurses. (2012). *Code of ethics*. Retrieved from http://www.icn.ch/who-we-are/code-of-ethics-for-nurses/

Jeffreys, M. R., & Dogan, E. (2012). Evaluating the influence of cultural competence education on students' transcultural self-efficacy perceptions. *Journal of Transcultural Nursing*, *23*(2), 188–197.

Kawauchi, K. (2011). Present situation and problems of medical interpreters in Japan: Research of medical treatment for foreigners. *Kyushu Communication Studies*, *9*, 25–35.

Kowalewski, B., Massen, A., & Mullins, S. (2010). *Cultural sensitivity training module*. Retrieved from http://www.weber.edu/CommunityInvolvement/Menxstoring_Tutoring.html

Lin, C.-N., Mastel-Smith, B., Alfred, D., & Lin, Y.-H. (2015). Cultural competence and related factors among Taiwanese nurses. *Journal of Nursing Research*, *23*(4), 252–261.

Meydanlioglu, A., Arikan, F., & Gozum, S. (2015). Cultural sensitivity levels of university students receiving education in health disciplines. *Advances in Health Sciences Education*, *20*(5), 1195–1204.

Ministry of Interior, Directorate General of Migration Management. (2015). *Migration statistics*. Retrieved from http://www.goc.gov.tr/icerik6/duzensiz-goc_363_378_4710

Ministry of Interior, General Directorate of Immigration. (2013). *Migration Reports of Turkey*. Retrieved from http://www.goc.gov.tr/files/files/2013_Yili_Turkye_Goc_Raporu.pdf

Rechel, B., Mladovsky, P., Ingleby, D., Mackenbach, J. P., & McKee, M. (2013). Migration and health in an increasingly diverse Europe. *Lancet*, *381*(9873), 1235–1245.

Schim, S. M., & Doorenbos, A. Z. (2010). A three-dimensional model of cultural congruence: Framework for intervention. *Journal of Social Work in End-of-Life and Palliative Care*, *6*, 256–270.

Tucker, C. M., Arthur, T. M., Roncoroni, J., Wall, W., & Sanchez, J. (2015). Patient-centered, culturally sensitive health care. *American Journal of Lifestyle Medicine*, *9*(1), 63–77.

Uzun, Ö., & Sevinç, S. (2015). The relationship between cultural sensitivity and perceived stress among nurses working with foreign patients. *Journal of Clinical Nursing*, *24*(23–24), 3400–3408.

Weech-Maldonado, R., Elliott, M. N., Pradhan, R., Schiller, C., Hall, A., & Hays, R. D. (2012). Can hospital cultural competency reduce disparities in patient experiences with care? *Medical Care*, *50*(Suppl.), S48–S55.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Use of Play Therapy in Nursing Process: A Prospective Randomized Controlled Study

Emel Sezici, PhD, RN[1], Ayse Ferda Ocakci, PhD, RN[2], & Hasibe Kadioglu, PhD, RN[3]

1 Assistant Professor, Department of Pediatric Nursing, Kutahya School of Health Science, Dumlupinar University, Kutahya, Turkey
2 Professor, School of Nursing, Koc University, Istanbul, Turkey
3 Associate Professor, Department of Community Health Nursing, Faculty of Health Science, Marmara University, Istanbul, Turkey

Key words
Nursing intervention, nursing process, play therapy, pre-school children

Correspondence
Asst. Prof. Emel Sezici, Dumlupinar University, Kutahya School of Health Science, Evliya Celebi Central Campus, 43000, Kutahya, Turkey.
E-mail: emel.sezici@dpu.edu.tr

Accepted December 1, 2016

doi: 10.1111/jnu.12277

Abstract

Purpose: Play therapy is a nursing intervention employed in multidisciplinary approaches to develop the social, emotional, and behavioral skills of children. In this study, we aim to determine the effects of play therapy on the social, emotional, and behavioral skills of pre-school children through the nursing process.

Design: A single-blind, prospective, randomized controlled study was undertaken. The design, conduct, and reporting of this study adhere to the Consolidated Standards of Reporting Trials (CONSORT) guidelines.

Methods: The participants included 4- to 5-year-old kindergarten children with no oral or aural disabilities and parents who agreed to participate in the study. The Pre-school Child and Family Identification Form and Social Competence and the Behavior Evaluation Scale were used to gather data. Games in the play therapy literature about nursing diagnoses (fear, social disturbance, impaired social interactions, ineffective coping, anxiety), which were determined after the preliminary test, constituted the application of the study.

Findings: There was no difference in the average scores of the children in the experimental and control groups in their Anger-Aggression (AA), Social Competence (SC), and Anxiety-Withdrawal (AW) scores beforehand ($t = 0.015$, $p = .988$; $t = 0.084$, $p = .933$; $t = 0.214$, $p = .831$, respectively). The difference between the average AA and SC scores in the post-test ($t = 2.041$, $p = .045$; $t = 2.692$, $p = .009$, respectively), and the retests were statistically significant in AA and SC average scores in the experimental and control groups ($t = 4.538$, $p = .000$; $t = 4.693$; $p = .000$, respectively). In AW average scores, no statistical difference was found in the post-test ($t = 0.700$, $p = .486$), whereas in the retest, a significant difference was identified ($t = 5.839$, $p = .000$).

Conclusions: Play therapy helped pre-school children to improve their social, emotional, and behavioral skills. It also provided benefits for the children to decrease their fear and anxiety levels, to improve their communication and coping skills, and to increase their self-esteem.

Clinical Relevance: The study concluded that play therapy helps develop the social, emotional, and behavioral skills of pre-school children. It has also helped children lower their fear and anxiety levels, improve their communication and coping skills, and promote their self-esteem. Pediatric nurses are recommended to include play therapy in their profession and in the nursing process.

The mental and emotional health of children has been a prominent theme in nursing for a long time (Jayne & Ray, 2016) as it is highly important to determine the children at risk as early as possible and to direct them to preventive intervention programs.

Children can express themselves through playing games more comfortably (Landreth, 2012). Lack of games, which are considered to be inevitable activities for children, in their lives may cause a failure in their physical, cognitive, emotional, and social development (Hirose, Koda, & Minami, 2012). Play therapy is an evidence-based intervention for the problems and their diagnoses in children (Schottelkorb, Swan, Jahn, Haas, & Hacker, 2015). Play therapy interventions can be used as therapeutic and dramatic activities (Saucier, 1988). Nurses can use games to get a child ready for an operation and in invasive procedure, or they might be used in daily routine activities (Haiat, Bar-Mor, & Shochat, 2003). There are many studies that try to emphasize the benefits of therapeutic games for hospitalized children. The effects of therapeutic games have been studied to determine the psychosocial needs of pediatric oncology patients (O'Connor & Drennan, 2003); to create a trustable environment between child patients and healthcare specialists (Pan, Chiu, Shen, & Chen, 2004); and to lessen the unwanted behavior of children while bloodletting (Ribeiro, Sabatés, & Ribeiro, 2001). The results of these studies have revealed that the social, emotional, and behavioral skills of hospitalized children are improved when therapeutic games are practiced by nurses. However, a review of the literature showed there are no studies about play therapy conducted by nurses to improve the mental and emotional health of healthy children. Thus, we believe the results of this study will contribute to the existing literature.

This study aims to determine the effects of play therapy on the social, emotional, and behavioral skills of preschool children. The hypothesis that "play therapy eases fear, impaired social interactions, self-esteem disturbance, ineffective coping, and anxiety in children" has been tested, and the data gathered in accordance with that hypothesis have been discussed.

Methods

Design

The study was designed to be a single-blind, prospective, randomized controlled study (1:1). In order to conduct the study, informative consent forms were obtained from the parents, as were permissions for the scales used, institutional permissions (kindergarten, provincial national education directorate), and approval form from the ethics committee (17.02.2012/issue 4, Marmara University, Institute of Health Sciences). Figure S1 describes the study flow. The design, conduct, and reporting of this study adhere to the Consolidated Standards of Reporting Trials (CONSORT) guidelines.

Setting and Participants

The study was conducted in one selected kindergarten, which is the biggest one in Kutahya, Turkey. The kindergarten includes children from high-, medium-, and low-income families. Some of the students were enrolled in full-day programs, while others were enrolled in half-day programs. The participants included 4- to 5-year-old kindergarten children with no oral or aural disabilities and whose parents agreed to participate in the study.

Interventions

The data for the study were gathered by the researcher between October 2012 and June 2013. The Pre-school Child and Family Identification Form and the Social Competence and Behavioral Evaluation Scale (SCBE-30) were filled out by either a mother or father of the children. An informative meeting was held for the parents on how to fill out the data-gathering tools. The data-gathering tools were filled out together with the parents who attended the informative meeting. For parents who could not attend the meeting, the data-gathering tools were sent to their home addresses by the classroom teacher with the necessary instruction manual on how to fill out the forms. These documents were returned within a period of 2 weeks. After the forms were completed by the family, they were randomized to identify the experimental and control groups (pretest). After 16 deregistered students had been disqualified from the study, the total arithmetic average scores for the subscales (Anger-Aggression [AA]: 38.800; Social Competence [SC]: 33.421; and Anxiety-Withdrawal [AW]: 35.957) and the arithmetic average scores of 10 items in each subscale (AA: 3.880; SC: 3.342; AW: 3.595) were recalculated. The items scored below the average were discussed to form nursing diagnoses (Table S1, available with the online version of this article). As Table S1 indicates, scale items 7 and 26 express "Fear"; items 2 and 15 express "Impaired Social Interactions"; items 1 and 13 express "Self-Esteem Disturbance"; items 4, 6, 20, and 29 express "Ineffective Coping"; and items 3, 5, and 10 express "Anxiety." Play dough activities in the play therapy literature were selected according to these nursing diagnoses. The relevance of the selected games was reviewed by 10 specialists (5 academic members from the department of pediatric health and diseases nursing, 2

academic members from the department of public health nursing, 1 academic member from the department of surgical diseases nursing, 1 health professional from the department of pediatric psychiatry, and 1 health professional from the department of child development). The application levels of these games were based on Social Cognitive Theory, and these games constitute our nursing interventions. The pre-application of the study was conducted in another kindergarten with 12 children 4 to 5 years of age. As a result of the pre-application, the games selected from the play therapy literature were found to be applicable to children 4 to 5 years of age. After the pre-application, the game activities were conducted with the children in the experimental group 4 days a week for 4 weeks. Every day two 30-min games were played with 10 of the 39 children in the experimental group, and each week two game activities were played with each child. In total, eight games were played by each of the 39 children in the experimental group at the end of 4 weeks. Game activities with the children were conducted by the researcher, who is an expert in his or her field. No activities were conducted with the 40 children in the control group. In Tables S2 through S8 (available with the online version of this article), the aim regarding nursing diagnosis, nursing interventions, and evaluation are shown.

Data-Gathering Tools

The data-gathering tools were composed of the Pre-school Child and Family Identification Form, developed by the researcher in accordance with the literature, and the SCBE-30.

Pre-school Child and Family Identification Form. The form is composed of two parts and 15 questions. In the first part, there are seven questions about the child (name and surname, gender, age, family members or relatives he or she lives with, school type [full-time or part-time]), and in the second part, there are eight questions about parents' ages and educational and occupational statuses.

Social Competence and Behavior Evaluation Scale. The SCBE-30, developed by LaFreniere and Dumas in 1996, is a measuring tool to determine the children who are at risk of emotional and behavioral disorders in the pre-school period. The original form of the SCBE-30 was in English, and it was translated into Turkish by Corapci, Aksan, Arslan-Yalcin, and Yagmurlu (2010) and was proved to be valid and reliable. It is scored on a 6-point Likert scale. The responses given to the items range from "*always*" (6 points) to "*never*" (1 point). The SCBE-30 is composed of 30 questions, having three subscales with 10 items each. The AA subscale measures problematic symptoms (negative features) such as resistance to adults and maladaptive and aggressive behavior in peer relations. Questions 1, 7, 8, 9, 12, 14, 19, 21, 23, and 26 are in the AA subscale. The SC subscale measures positive features such as cooperation and problem solving when they are together with their peers. Questions 2, 6, 11, 13, 15, 17, 20, 22, 27, and 30 are in the SC subscale. The AW subscale evaluates sad, depressive moods of the children and problematic symptoms such as being shy within a group (negative features). Questions 3, 4, 5, 10, 16, 18, 24, 25, 28, and 29 are in the AW subscale. There is not a total score of the scale since there are items measuring both positive and negative features. The total score of each subscale (AA, SC, and AW) was calculated separately. The items measuring negative features were coded reversely when the data were evaluated. The minimum possible subscale score is 10, whereas the maximum possible score is 60. A low score demonstrates that one does not have enough social skills (SC subscale), emotional skills (AW subscale), and behavioral skills (AA subscale), while a high score demonstrates that one does have social, emotional, and behavioral skills.

In order to calculate the reliability of the SCBE-30, Cronbach's alpha coefficient and test–retest correlation were used. The internal consistency of the scale was calculated with Cronbach's alpha coefficient. In this evaluation, the consistency of the responses given to all the items in the scale and item homogeneity were analyzed, and the Cronbach's alpha value was found to be 0.87 in the AA subscale, 0.88 in the SC subscale, and 0.84 in the AW subscale. In the reliability analysis of the study, the Cronbach's alpha reliability analysis, which was conducted separately for each application, revealed that the lowest reliability score obtained was 0.79 and the highest reliability score obtained was 0.86. Therefore, the reliability of the SCBE-30 was also determined to be high in this study.

Outcomes

Two weeks after the application, the experimental and control groups were given the post-test, and 3 months later the retest application was applied. The same games were also played with the children in the control group after the data collection processes. The determination of the experimental and control groups and the identification of nursing diagnoses did not affect the results since they were conducted after 16 students had been disqualified from the study because they deregistered from the kindergarten.

Sample Size, Randomization, and Blinding

The entire study population was achieved without sampling. Ninety-five children and their parents participated in the study. After the pretest, a simple randomization method was employed by deriving random numbers on a computer among the children who shared similar features in total scores obtained from SCBE-30 subscales (SC, AA, and AW) and sociodemographic variables (age, gender, school type, maternal education, and maternal employment). However, 16 students were disqualified from the study because they deregistered from the kindergarten during the study period. The study was conducted in a single-blind procedure with a total of 79 students, 39 in the experimental group and 40 in the control group. Blinding was insured as the participants did not know which group they were in.

Statistical Methods

Statistical analyses were performed using IBM SPSS Statistics 21 software (IBM Corp., Armonk, NY, USA). The independent variables of the study were age, gender, school type, maternal education, and maternal employment, and the dependent variables were the scores in the SCBE-30. Descriptive statistics were used to evaluate the data. Because the sample was larger than 30, the Kolmogorov-Smirnov test was used to determine whether there was a normal distribution or not. The independent-samples *t*-test and one-way analysis of variance (ANOVA) test were used for the data with a normal distribution, and the Mann-Whitney U test and Kruskal-Wallis test were used for the data that were not normally distributed. The *t* test was employed for the comparison of the scores that the children obtained from pretests, post-tests, and retests and from the subscale of the scale, whereas variance analysis (repeated measures ANOVA) was employed for the dependent samples to compare the variations in the averages of the pretests, post-tests, and retests. Tukey's test was used to identify which groups the variations were in. A p value of less than .05 was considered to be statistically significant.

Results

A total of 79 children participated in the study, 39 in the experimental group and 40 in the control group. No differences were found between control and experimental groups concerning sociodemographic variables (age, gender, school type, maternal education, and maternal employment; $p > .05$; Table S9, available with the online version of this article).

There were no differences in the average AA, SC, and AW scores of the experimental and control groups before the application ($t = 0.015$, $p = .988$; $t = 0.084$, $p = .933$; $t = 0.214$, $p = 0.831$, respectively). The AA and SC average scores of the post-test ($t = 2.041$, $p = .045$; $t = 2.692$, $p = .009$, respectively), and the retests were statistically significant in AA and SC average scores in the experimental and control groups ($t = 4.538$, $p = .000$; $t = 4.693$; $p = .000$, respectively). No statistical difference was found in the AW average scores of the post-test ($t = 0.700$, $p = .486$), while a significant difference was found in the average scores of the retest ($t = 5.839$, $p = .000$; Table S10, available with the online version of this article). The repeated measures ANOVA in the experimental group was statistically significant for all three measures ($F = 125.079$; $F = 150.503$; $F = 135.954$; $p = .000$). After further analysis, all pairwise differences between pretest, post-test, and retest were found to be statistically significant (see Table S10). In the control group, all of the repeated measures showed statistically significant ANOVA results ($F = 37.231$; $F = 31.851$; $F = 66.943$; $p = .000$). After further analysis, this difference was found to be significant between the pretest and post-test ($t = 7.640$; $t = 7.504$; $t = 8.825$; $p = .000$), and between the pretest and retest ($t = 6.101$; $t = 5.646$; $t = 10.403$; $p = .000$). There was no significant difference between the posttest and the retest in AA, SC, and AW average scores ($t = 1.111$, $p = .273$; $t = 0.224$, $p = .824$; $t = 0.187$, $p = .853$, respectively; Table S10).

Scale items 7 and 26 constituted the construct of "Fear"; items 1 and 13 the construct of "Self-Esteem Disturbance"; items 2 and 15 the construct of "Impaired Social Interactions"; items 4, 6, and 20 the construct of "Ineffective Coping"; and items 3, 5, and 10 the construct of "Anxiety." When compared to the children in the control group, the subscale item average scores of the children in the experimental group increased more between the pretest, post-test, and retest (Table S11, available with the online version of this article). The nursing process was completed with this increase seen in the pretest and post-test in the experimental group.

Discussion

Play therapy is an effective therapeutic instrument that enables children to develop problem-solving skills, acquire appropriate coping skills, and help them to dynamically interact with their social environment, and also supports the reasoning process (Hall & Reet, 1999). Play therapy, employed in multidisciplinary approaches, can be defined as a nursing intervention (Saucier, 1988). Health specialists can make significant contributions

to the key domains of child development (physical, intellectual, emotional, and social) by using games effectively (Bekmezci & Ozkan, 2015).

In this study, conducted by using play therapy, a significant difference was identified in the average scores of the children in the experimental group in the AA subscale after the application. Items 7 and 26 of this subscale constituted the "Fear" construct. Compared to the children in the control group, the average scores of the children in the experimental group obtained on the subscale items increased more in the post-test and retest (compared to the pretest). The use of play therapy by pediatrics nurses in the nursing process is thought to be effective in controlling pre-school children's fears. Tsai et al. (2013) studied the effect of play therapy on fear of radiotherapy with children who were having brain tumor treatment. Play therapy eased the fear in children and helped them to be more cooperative in the treatment process and improved the doctor–patient relationship (Tsai et al., 2013). Similarly, the effect of play therapy on anger, aggression, and fear levels among the children 3.5 to 7.5 years of age who had experienced terrorist attacks ($n = 29$) was studied. After the application of play therapy, there was a significant difference in the level of children's anger, aggression, and fear (Cohen, Chazan, Lerner, & Maimon, 2010). In another study (Santacruz, Méndez, & Sánchez-Meca, 2006), the effect of play therapy on fear of the dark among the children ($n = 78$) and their families was studied with two different techniques. Both techniques employed in the play therapy proved to be effective to ease fear of the dark in children; however, the second play therapy technique (gradual conditions + game) had more effective results than the first technique (story + game).

The first item in the AA subscale and item 13 in the SC subscale constituted the "Self-Esteem Disturbance" construct. There was a significant difference in the AA and SC subscale average scores of the children in the experimental group after the application. The average scores of these subscale items increased from the pretest, post-test, and retest. This finding suggests that play therapy can be an effective and applicable method to help pre-school children to improve their self-esteem. Similarly, as a result of their meta-analysis about the different approaches of play therapy, Lin and Bratton (2015) found that the use of play therapy with children who had low self-esteem can increase their self-esteem significantly. In another meta-analysis, similar results were reported. Bratton and Ray (2000) reported that play therapy enabled children to improve their self-esteem and control emotions like anger. In a similar setting, Baggerly and Parker (2005) studied play therapy with children 5 to 10 years of age. Their study aimed to have children improve their self-esteem and coping skills during the therapy. Plastic plates, toy cars, toy soldiers, play dough, construction paper, children's scissors, and masks were used. They concluded that play therapy helped improve the children's self-esteem and self-confidence.

The difference in average scores obtained on the SC subscale by the children in the experimental group was found to be significant. Items 2 and 15 in this subscale constituted the "Impaired Social Interactions" construct. Compared to the children in the control group, the average scores obtained by the children in the experimental group on the SC subscale increased from the pretest, post-test, and retest. Based on this finding, it can be said that play therapy can help children improve their socialization skills. Recent studies have shown that children whose social skills cannot be improved in the first 6 years of life have a higher tendency to be emotionally and behaviorally problematic, and tend to be socially maladaptive individuals in their adulthood (Ladd, 2000). Therefore, nowadays emotional and behavioral problems have been at the core of many studies regarding pre-school children (Alink et al., 2006). This finding of our study supports other studies in the literature. For example, Tahmores (2011) studied the role of games in social and cognitive development of kindergarten children (3 to 5 years of age), pre-school children (6 to 7 years of age), and primary school children (8 to 12 years of age). After the application, important differences were found in the social skills and cognitive levels of the children 3 to 5 years of age (kindergarten), 6 to 7 years of age (pre-school), and 8 to 12 years of age (primary school). Tahmores (2011) concluded that compared to kindergarten and primary school children, the socialization skills of pre-school children improved better with play therapy. In another study, Gagnon and Nagle (2004) analyzed the social skills and interactive games of children 50 to 66 months of age. The study concluded that the social skills of the children who were adaptive and willing in group games increased more than those of others. It can be said that play therapy promotes children's socialization skills.

In our study, a significant difference was found in the SC and AW subscale average scores obtained by the children in the experimental group after the application. Items 6 and 20 in the SC subscale and items 4 and 29 in the AW subscale constituted the "Ineffective Coping" construct. Compared to the average scores obtained on the pretest, the item average scores obtained on these subscales increased in the post-test and retest. It can be interpreted that the play therapy employed in the experimental group had a positive effect on children and was effective in improving their problem-solving and coping skills. Similarly, Ray, Armstrong, Balkin, and Jayne (2015) stated as a result of their meta-analysis that play therapy had a great impact on the improvement

of children's coping and socialization skills. In another study, Blanco and Ray (2011) analyzed the relation between play therapy and academic achievement and communication skills. They found that as a result of the intervention with the play therapy, the level of academic achievement and communication skills of the children in the experimental group increased more compared to the children in the control group. Moreover, as a result of his meta-analysis, Rogers-Nicastro (2006) pointed out that play therapy had a positive effect on children's self-control, tolerance, and social development. He stated that the children in the experimental group had more social development and self-control, and were more tolerant of others than the children in the control group.

A significant difference was found in the AW subscale average scores of the children in the experimental group. Items 3, 5, and 10 of the subscale constituted the "Anxiety" construct. The item average scores in this subscale increased from the pretest, post-test, and retest. Based on this, play therapy can be said to lessen the level of anxiety of children. Moreover, the children who participated in play therapy have continued to ease their anxiety by using effective coping techniques. Play therapy contributes to the development of children's cognitive and emotional skills, and children have the opportunity to express their wishes and emotions while playing with play dough, and therefore their anxiety levels decrease (Shoaakazemi, Javid, Tazekand, Rad, & Gholami, 2012). Rahmani and Moheb (2010) studied 30 kindergarten children in order to determine the effect of play therapy. As a result of the play therapy, the anxiety levels of the children in the experimental group were reported to have decreased significantly compared to those in the control group. In another study, play therapy was identified as an effective technique in reducing separation anxiety in children 7 to 9 years of age (Shoaakazemi et al., 2012). Similarly, many studies revealed that play therapy could be used to decrease separation anxiety (Baggerly, 2004; Shen, 2002) and anxiety disorders (Ollendick & Horsch, 2007).

Study Limitations

Only one school was used in the study, and findings may not be representative of others in different geographical locations. The sample size was reduced from 95 to 79 because 16 deregistered students were disqualified from the study. Deregistration is a limitation for our study, but our research power was not affected because we reached 83.15% of our targeted sample size. The social environment or preschool activities, except or together with the play therapy intervention, may have also had an effect on the improvement of social, emotional, and behavioral skills of children.

Conclusions

In our study, play therapy helped pre-school children to improve their social, emotional, and behavioral skills. It also provided benefits for the children to decrease their fear and anxiety levels, to improve their communication and coping skills, and to increase their self-esteem. Accordingly, it is recommended that pediatric nurses should include play therapy in their profession and in the nursing process.

Clinical Resources

- American Psychological Association. (2015). *Children's mental health*: http://www.apa.org/pi/families/children-mental-health.aspx
- World Health Organization. (2014). *Mental health: Strengthening our response*: http://www.who.int/mediacentre/factsheets/fs220/en/

References

Alink, L. R., Mesman, J., Van Zeijl, J., Stolk, M. N., Juffer, F., Koot, H. M., ... Van IJzendoorn, M. H. (2006). The early childhood aggression curve: Development of physical aggression in 10- to 50-month-old children. *Child Development*, *77*(4), 954–966. doi:10.1111/j.1467-8624.2006.00912.x

Baggerly, J. (2004). The effects of child-centered group play therapy on self-concept, depression, and anxiety of children who are homeless. *International Journal of Play Therapy*, *13*(2), 31–51. doi:10.1037/h0088889

Baggerly, J., & Parker, M. (2005). Child-centered group play therapy with African American boys at the elementary school level. *Journal of Counseling and Development*, *83*(4), 387–396.

Bekmezci, H., & Ozkan, H. (2015). The effect of games and toys on child health. *Izmir Dr. Behcet Uz Children's Hospital Journal*, *5*(5), 81–87. doi:10.5222/buchd.2015.081

Blanco, P. J., & Ray, D. C. (2011). Play therapy in elementary schools: A best practice for improving academic achievement. *Journal of Counseling and Development*, *89*(2), 235–243. doi:10.1002/j.1556-6678.2011.tb00083.x

Bratton, S., & Ray, D. (2000). What the research shows about play therapy. *International Journal of Play Therapy*, *9*(1), 47–88. doi:10.1037/h0089440

Cohen, E., Chazan, S., Lerner, M., & Maimon, E. (2010). Posttraumatic play in young children exposed to terrorism: An empirical study. *Infant Mental Health Journal*, *31*(2), 159–181. doi:10.1002/imhj.20250

Corapci, F., Aksan, N., Arslan-Yalcin, D., & Yagmurlu, B. (2010). Emotional, behavioral and social cohesion screening in preschool: Social competence and behavior assessment-30 scale. *Journal of Child and Adolescent Mental Health*, *17*(2), 63–74.

Gagnon, S. G., & Nagle, R. J. (2004). Relationships between peer interactive play and social competence in at-risk preschool children. *Psychology in the Schools*, *41*(2), 173–189. doi:10.1002/pits.10120

Haiat, H., Bar-Mor, G., & Shochat, M. (2003). The world of the child: A world of play even in the hospital. *Journal of Pediatric Nursing*, *18*(3), 209–214. doi:10.1053/jpdn.2003.28

Hall, C., & Reet, M. (1999). Enhancing the state of play in children's nursing. *Journal of Child Health Care*, *4*(2), 49–54.

Hirose, T., Koda, N., & Minami, T. (2012). Correspondence between children's indoor and outdoor play in Japanese preschool daily life. *Early Child Development and Care*, *182*(12), 1611–1622. doi:10.1080/03004430.2011.634065

Jayne, K. M., & Ray, D. C. (2016). Child-centered play therapy as a comprehensive school counseling approach: Directions for research and practice. *Person-Centered & Experiential Psychotherapies*, *15*, 1–14. doi:10.1080/14779757.2015.1132757

Ladd, G. (2000). The fourth R: Relationships as risks and resources following children's transition to school. *American Educational Research Association Division E Newsletter*, *19*(1), 9–11.

LaFreniere, P. J., & Dumas, J. E. (1996). Social competence and behavior evaluation in children ages 3 to 6 years: The short form (SCBE-30). *Psychological Assessment*, *8*(4), 369–377. doi:10.1037/1040-3590.8.4.369

Landreth, G. L. (2012). *Play therapy: The art of the relationship*. New York, NY: Routledge.

Lin, Y. W., & Bratton, S. C. (2015). A meta-analytic review of child-centered play therapy approaches. *Journal of Counseling & Development*, *93*(1), 45–58. doi:10.1002/j.1556-6676.2015.00180.x

O'Connor, G., & Drennan, C. (2003). Optimising patient care: Meeting the needs of the paediatric oncology patient. *Journal of Diagnostic Radiography and Imaging*, *5*(01), 33–38. doi:10.1017/S1460472803000063

Ollendick, T. H., & Horsch, L. M. (2007). Fears in clinic-referred children: Relations with child anxiety sensitivity, maternal overcontrol, and maternal phobic anxiety. *Behavior Therapy*, *38*(4), 402–411. doi:10.1016/j.beth.2006.12.001

Pan, H., Chiu, P., Shen, J., & Chen, C. (2004). [Application of therapeutic play in the process of nursing a preschool patient]. *Hu li za zhi* [*Journal of Nursing*], *51*(4), 94–100.

Rahmani, P., & Moheb, N. (2010). The effectiveness of clay therapy and narrative therapy on anxiety of pre-school children: A comparative study. *Procedia-Social and Behavioral Sciences*, *5*, 23–27. doi:10.1016/j.sbspro.2010.07.044

Ray, D. C., Armstrong, S. A., Balkin, R. S., & Jayne, K. M. (2015). Child-centered play therapy in the schools: Review and meta-analysis. *Psychology in the Schools*, *52*(2), 107–123. doi:10.1002/pits.21798

Ribeiro, P. d. J., Sabatés, A. L., & Ribeiro, C. A. (2001). The use of a therapeuthic toy as an instrument of nursing intervention when preparing the child to blood collection. *Revista da Escola de Enfermagem da USP*, *35*(4), 420–428. doi:10.1590/S0080-62342001000400016

Rogers-Nicastro, J. (2006). A meta-analytic review of play therapy outcomes and the role of age: Implications for school psychologists (Doctoral dissertation). St. John's University, New York.

Santacruz, I., Méndez, F. J., & Sánchez-Meca, J. (2006). Play therapy applied by parents for children with darkness phobia: Comparison of two programmes. *Child & Family Behavior Therapy*, *28*(1), 19–35. doi:10.1300/J019v28n01_02

Saucier, B. (1988). Play therapy: A nursing intervention. *Advancing Clinical Care*, *4*(5), 22–23.

Schottelkorb, A. A., Swan, K. L., Jahn, L., Haas, S., & Hacker, J. (2015). Effectiveness of play therapy on problematic behaviors of preschool children with somatization. *Journal of Child and Adolescent Counseling*, *1*(1), 3–16. doi:10.1080/23727810.2015.1015905

Shen, Y.-J. (2002). Short-term group play therapy with Chinese earthquake victims: Effects on anxiety, depression and adjustment. *International Journal of Play Therapy*, *11*(1), 43–63. doi:10.1037/h0088856

Shoaakazemi, M., Javid, M. M., Tazekand, F. E., Rad, Z. S., & Gholami, N. (2012). The effect of group play therapy on reduction of separation anxiety disorder in primitive school children. *Procedia-Social and Behavioral Sciences*, *69*, 95–103. doi:10.1016/j.sbspro.2012.11.387

Tahmores, A. h. (2011). Role of play in social skills and intelligence of children. *Procedia-Social and Behavioral Sciences*, *30*, 2272–2279. doi:10.1016/j.sbspro.2011.10.444

Tsai, Y.-L., Tsai, S.-C., Yen, S.-H., Huang, K.-L., Mu, P.-F., Liou, H.-C., . . . Lou, H.-L. (2013). Efficacy of therapeutic play for pediatric brain tumor patients during external beam radiotherapy. *Child's Nervous System*, *29*(7), 1123–1129. doi:10.1007/s00381-013-2099-3

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Figure S1. CONSORT 2010 Flow diagram.
Table S1. Diagnosis Steps of the Nursing Process.
Table S2. The Nursing Process for Fear.
Table S3. The Nursing Process for Self-Esteem Disturbance.
Table S4. The Nursing Process for Impaired Social Interaction.

Table S5. The Nursing Process for Impaired Social Interaction.
Table S6. The Nursing Process for Ineffective Coping.
Table S7. The Nursing Process for Ineffective Coping.
Table S8. The Nursing Process for Anxiety.
Table S9. Socio-Demographic Variables of the Children and Family.
Table S10. Comparison of Sub-Scale Average Scores Among the Pre-, Post-, and Re-Test.
Table S11. The Sub-Scale Item Average Scores of the Experimental and Control Groups.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Women's and Healthcare Workers' Beliefs and Experiences Surrounding Abortion: The Case of Haiti

Laura Dean Albuja, DNP, FNP-C[1], Rosina Cianelli, PhD, MPH, RN, IBCLC, FAAN[2], Debbie Anglade, PhD, MSN, RN, LHRM, CPHQ, CCM[3], Brenda Owusu, DNP, ARNP, ANP-BC[3], Laly Joseph, DVM, DNP, RN, C, MSN, ARNP, BC[3], Sonique Sailsman, MSNEd, RN, CPN, CCRN, PhD[4], & Lilian Ferrer, MSN, RN, FAAN[5]

1 Beta Tau, Family Nurse Practitioner, University of Miami School of Medicine, Department of Pediatrics, Pediatric Mobile Clinic, Miami, FL, USA
2 *Beta Tau*, Associate Professor, University of Miami School of Nursing and Health Studies, Coral Gables, FL, USA
3 *Beta Tau*, Assistant Professor of Clinical, University of Miami School of Nursing and Health Studies, Coral Gables, FL, USA
4 Lead Faculty-Undergraduate Nursing, College of Online and Continuing Education, Nursing and Health Professions Department, Southern New Hampshire University, Manchester, NH, USA
5 *Alpha Lambda & Beta Tau*, Associate Professor, Pontifica Universidad, Catolica de Chile Escuela de Enfermeria, Macul, Santiago, Chile

Key words
Abortion, Haiti, health care, sexual health, women

Correspondence
Dr. Laura Dean Albuja, University of Miami, Miller School of Medicine, Department of Pediatrics, 1601 NW 12th Ave, #4067 Miami, FL 33136. E-mail: l.albuja@miami.edu

Accepted December 5, 2016

doi: 10.1111/jnu.12278

Abstract

Purpose: Women in developing countries usually encounter serious inequities in terms of women's health. To date, there is limited understanding of abortion from the perspective of Haitian women. As a limited-resource country, Haiti faces complex social issues and healthcare challenges. With abortion being illegal, many adult and teenage women seek clandestine abortions. The aim of this study was to explore and gain a greater understanding of women's and healthcare workers' beliefs and experiences about abortion in Haiti.

Methods: Descriptive qualitative design was used to elicit information for the study. Eight focus groups were conducted with Haitian women and healthcare workers in five communities in the south of Haiti: Les Cayes, Aquin, St. Louis du Sud, Cavaillon, Maniche, and Ile a Vache. Participants were purposively selected and consented to participate and to be tape recorded. Content analysis followed using the verbatim transcripts, with triangulation of four researchers; saturation was reached with this number of focus groups.

Findings: The transcripts revealed six main themes regarding beliefs and experiences about abortion in Haiti: cultural aspects, consumers, perils of care, and legal concerns. Both women and healthcare workers discussed the repercussions of illegal abortion and the role of the government and hospitals. Participants identified similar perils and complications of unsafe abortions, such as postpartum hemorrhage and infection.

Conclusions: Results showed an urgent need to create a public health response that addresses different dimensions of abortion by engaging women and healthcare providers in rapid and concrete actions that promote access and safe care of women. It is imperative to conduct more research related to abortion in order to examine other associated factors to better understand the links between abortion and sexual health disparities among Haitian women. These results highlight the need for a rapid response to the need of this vulnerable group, who are experiencing high rates of mortality. This can also serve as a directive to approach this issue in other developing countries in the Caribbean region, particularly from its clinical relevance.

Clinical Relevance: Unsafe abortions are prevalent in developing countries; yet limited research exists on the topic. It is paramount to gain an understanding of the women's and healthcare workers' beliefs and experiences

surrounding abortion, in order to develop interventions that prevent abortion complications in Haitian women.

Haiti, located on the western portion of the Caribbean island Hispaniola, faces many geopolitical and healthcare issues. Haiti carries the highest maternal mortality rate in the Western Hemisphere, and many women and children lack access to healthcare (WHO, 2015b). Various obstacles to access exist, including economics, transportation, and low ratios of healthcare providers to citizens. Haiti is one of the poorest countries in the world, with an annual gross national income per capita of $820 in 2014 (The World Bank, 2015b), making economics a barrier to accessing health care (The World Bank, 2015a). According to the International Monetary Fund (2015), Haiti lacks infrastructure and an appropriate number of health professionals for each inhabitant. Data available from the World Health Organization (WHO, 2015c) show that in 1998 there were 0.25 physicians per 1,000 inhabitants and 0.107 nurses and midwifery personnel per 1,000 inhabitants, making it difficult for Haitians to find a healthcare provider.

The maternal mortality rate in Haiti is 380 deaths per 100,000 live births, compared to 85 deaths per 100,000 live births in the Latin American and Caribbean region (Pan American Health Organization, 2014). The adolescent fertility rate per 1,000 women was 65, based on the latest data available from 2009 (WHO, 2015a). In addition, no formal reports on abortion and its occurrence are available for the country. In particular, data about beliefs and practices as they relate to abortion in a country where it is an illegal practice could help illuminate some of the needs of the Haitian people (Martin, 2013). Because of the social stigma, unsafe abortions disproportionately affect developing nations, with more than 55% of abortions being performed in unsafe environments, compared to 92% of abortions in developed countries being performed in safe environments (Sedgh, Henshaw, Singh, Åhman, & Shah, 2007).

Haitian women state that abortion stigma prevents access to care, and following abortion women often present with symptoms for more than a week before pursuing necessary postabortion care (Berry-Bibee et al., 2014). Generally, Haitian women do not have access to contraception, abortion is illegal, and women who seek an abortion endure a social stigma both culturally and religiously (Maternowska, 2006).

Abortions in Haiti are governed by provisions of the Haitian Penal Code. The law regulating abortion is based on Article 317 of the French Penal Code of 1810. Under this law, any person performing an abortion is subject to imprisonment, and a medical professional who performs abortions is subject to forced labor (United Nations, 2011).

With the cultural beliefs and judicial rulings in Haiti making abortion both illegal and illicit, many women seek clandestine abortions. International studies have revealed unsafe conditions for women seeking abortions, with many women acquiring severe infections postabortion and needing to go to tertiary care facilities when possible, potentially increasing women's mortality (Berry-Bibee et al., 2014; Martin, 2013; Maternowska, 2006; Sundaram, Juarez, Bankole, & Singh, 2012).

In underdeveloped nations, such as Haiti, with strict abortion laws, women are susceptible to unsafe conditions for abortions. Often in these countries, women receive abortion services from people lacking the necessary skills and in environments deemed below the minimum medical standards. The legality of abortion plays a role in the safety of abortion procedures performed yet shows no correlation with the number of abortions performed (Sedgh et al., 2007).

Women feeling the burden of childrearing often resort to herbal remedies and other concoctions to terminate pregnancy (Editorial, 2009; Maternowska, 2006). Often, women with available funds go to a private hospital or clinic and receive an abortion with anesthesia. However, women without monetary resources resort to herbal potions and unsafe abortion practices. Additionally, while the law states abortion is illegal, it is unclear whether abortion is legal when saving the life of the mother. The Haitian Health ministry as of 2013 has been making an effort to address this lack of clarity (Martin, 2013).

The aim of this study was to reveal women's and healthcare workers' (HCWs') beliefs and experiences about abortion in the south of Haiti.

Methods

A qualitative descriptive design was used with focus groups as the data collection method. This technique was selected because it allows the researcher to stay close to the data and to the surface of words and events, while not penetrating their data at an interpretive depth (Sandelowski, 2000).

Setting and Participants

A convenience sample, consisting of 40 Haitian women and 39 HCWs, was recruited from communities located

in the South of Haiti: Les Cayes, Aquin, St. Louis du Sud, Cavaillon, Maniche, and Ile a Vache. These communities were selected because they are the ones that confront a huge burden related to maternal–child health morbidity and mortality in the south of Haiti.

Eligibility criteria for women included the following: (a) Haitian woman from 18 to 49 years old; (b) residing in one of the selected towns; and (c) having had at least one pregnancy in the past 10 years. Eligibility criteria for HCWs included the following: (a) Haitian HCW (e.g., nurses, physicians, technicians) and (b) practicing in one of the selected towns.

Eight focus groups, four with HCWs and four with women, were conducted. Saturation was used to determine the sample size (Office of Behavioral and Social Sciences Research, National Institutes of Health, 2001). When this was reached, the focus groups were discontinued. This project achieved saturation of data with eight focus groups.

Recruitment

Participants were recruited from healthcare centers, public places, and other community-based organizations in Les Cayes, Aquin, St. Louis du Sud, Cavaillon, Maniche, and Ile a Vache. Flyers were posted in health centers inviting HCWs to participate in the study. The flyers included the purpose of the study, eligibility criteria, and the time and date when the focus groups would be conducted. Two local Haitian female nurses trained by the research team recruited local women in the community and health centers. Using a script, the recruiters approached participants in these settings, introduced themselves, and asked potential participants if they were interested in the study. Once the eligibility of the participants was established and contact information collected, a time and date was scheduled to participate in a focus group. This study was approved by the Institutional Review Board of the University of Miami.

Data Collection

Data were collected through focus groups to obtain information about beliefs and experiences among participants who share common experiences and interests (Morgan, 1998). The focus groups were facilitated by a Haitian nurse and co-investigator experienced in focus group facilitation.

After obtaining consent, the facilitator conducted the focus groups using a semistructured guide, which allowed the focus group facilitators to cover similar areas with each focus group (Lofland, Snow, Anderson, & Lofland, 2005). The focus group is very useful for needs assessment and project evaluation purposes. Given their qualitative nature, focus groups allow researchers to look beyond the facts and numbers that might be obtained via other types of data collection (Leung & Savithiri, 2009). The questions chosen to guide the discussion were based on literature review, input from experts, and opinions from Haitian community leaders. The focus groups lasted an average of 60 min, and all of them were audio recorded. Active listening and sensitivity to the verbal and nonverbal responses of the study participants were important aspects considered by the facilitator. The facilitator responded neutrally to the participants throughout the focus groups, without influencing their answers (Patton, 2001).

Data Analysis

A trilingual (English, French, and Haitian Creole) native Haitian interpreter translated and transcribed the audio recordings directly into English (Cianelli et al., 2013, 2014). To help ensure accuracy and fidelity of the transcriptions and verify that there were no discrepancies between the Haitian Creole and English versions, the transcriptions were carefully reviewed by the native Haitian nurse who was member of the research team and who conducted the focus groups. The research team did not include any identifying information in the transcriptions. Research files were stored in a locked area, and digital files were saved in password-protected computers. Qualitative content analysis was used to recognize, code, and categorize patterns from text data (Patton, 2001; Sandelowski, 2000). More specifically, directed content analysis was used to analyze the transcripts from the focus groups (Hsieh & Shannon, 2005). A codebook and a coding sheet were developed to facilitate the coding process. Four research team members independently coded line by line, without input from others. At the point of completion, the results were compared and a 90% agreement of transcription was obtained between four members of the research team. The coders together determined the final themes and subthemes from the predetermined codes and new findings in the coding process.

Results

Six main categories emerged from the focus groups regarding abortion in Haiti: (a) cultural aspects, (b) specific circumstances where abortion is justified, (c) concealing abortions from others, (d) abortion complications, (e) abortion performer, and (f) legal concerns.

The 40 women participants ranged in age from 19 to 56 years, with a mean age of 32 years. Twenty-four women lived in rural settings and 16 lived in urban

settings. Twenty-nine of the women had a partner, while 11 did not. The women's level of education ranged from grades 2 through 8, with a mean grade of 3.8.

A total of 39 HCWs participated in the study, ranging in age from 23 to 52 years, with a mean age of 33 years; the HCWs included 3 physicians, 16 nurses, 1 nurse midwife, 12 certified auxiliary nurses, 1 community health worker, and 5 personnel from other specialty areas.

Cultural Aspects of Abortion

In addition to the illegality of abortion, several cultural factors emerged from both the women and HCW focus groups as reasons why pregnant women would have a secret and unsafe abortion. One of the women stated, "Abortion is a bad thing, so nobody will talk to you openly about that." Regarding the social stigma associated with having an abortion, one of the women participants made the following observation:

> It's very hard to know because they will not tell you. Even though they do it, they will not let you know. They will not let other people learn about it. In the future, they can be criticized for having done an abortion.

The majority of the women participants across all focus groups indicated that women who had abortions did so mainly due to economic reasons. One participant explained, "Besides teenagers, adults also do abortion. I have a friend who has six children. She didn't want to have more. So every time she is pregnant, she drinks some pills that allow her to terminate the pregnancy early." Another added, "They have economic problems. They don't want to have more children."

Concerning their personal views of abortion, a vast majority of the HCWs had a negative view. One HCW noted,

> I think it's a bad thing. When women came to me and ask me if we perform abortion, I always answer no. I tell them that they have knocked on the wrong door. Here, we take care of people but we don't destroy people's life. Our job is to help women give birth.

Regarding teenage girls who choose to have abortions, social stigma and religious belief were major contributing factors mentioned by the participants in the study. One HCW gave the following reasons as to why a teenage girl may want to have an abortion: "First of all, she doesn't want to lose a year of school; second, she doesn't want to have problems with her parents; finally, she doesn't want her classmates to know she is pregnant." Another HCW shared that based on her personal survey, "90% of induced abortion was perpetrated by teenagers." She continued to explain why teenagers have abortions: "They would be in big trouble if their parents know they are having sex. According to their religious belief, only married couples should have sex. Therefore, they use abortion as a birth control method."

Specific Circumstances Where Abortion Is Justified

Though women in the focus groups expressed hard stances regarding abortions, there appeared to be some ambivalence regarding their perceptions, ideas, and beliefs about the situations in which abortion may happen. A woman participant stated, "There are circumstances where they should be allowed to do that [abortion], like when a woman has five or six children and don't want to have more." In the focus groups conducted with HCWs, some also expressed that abortion is justified in certain situations. Commenting on adult women who have abortions, the HCWs mentioned economics as a major factor. One HCW stated,

> Some adults choose to have abortion because of their economic situation . . . . They decide to terminate the pregnancy because they think that if they have one more [child] they won't be able to take care of him since they already have three or four.

Another HCW gave the example of a woman "who had six children but didn't want to have a seventh one."

Concealing Abortions From Others

It is important to note that the majority of the women and HCWs participating in the focus groups expressed that it was mostly teenagers and young people who had abortions. One HCW stated that teenagers having abortions are ages "from 15 to 20." A woman participant placed the age of girls "from 10 to 16 years old." The woman participant further expounded,

> Yes, there are girls who have their period since 9 years old. If they start having sex early, they can get pregnant. Since they don't want their parents and their schoolmates or teachers to know about it, they try to find a way to get rid of the fetus.

Another woman participant noted, "The girls, they don't think before having sex. They just want to have fun. When they get pregnant, they get scared and that's when they want to do abortion."

Abortion Complications

Participants in the women's focus group identified similar perils and complications of unsafe abortions as described by the HCWs: hemorrhage, infection due to fetal remains, sepsis, uterine perforation, infertility, and death. One woman stated, "When the abortion is performed by a matron [traditional birth attendants], she gives her a potion to drink. This potion can cause the woman to bleed." Another woman noted, "Women can also die after drinking the portion given by the matron." A woman pointed out that "hemorrhage is one of the reasons. If it's a late abortion, the remains of the fetus can stay inside the woman's body and causes infection." Another woman participant shared the following: "I know a teenager who died as a result of an abortion . . . . The healthcare professionals found remains of the fetus inside her body. After a few days she died."

Ways Abortions Are Practiced

HCWs across all focus groups indicated that abortions are mainly performed under unsafe conditions. The abortions are performed either by the pregnant women themselves or charlatans. Women seeking to have abortions often resort to dangerous methods to induce an abortion, such as potions made of leaves and herbs, "pills," and nonsterile instruments such as hangers. This often results in serious complications. One HCW stated, "Sometimes they contact a traditional medical doctor who gives them some potion made of leaves and herbs." Another HCW added,

> Besides that, there is also a pill that is sold in the pharmacy, and used by a lot of women. However, this pill is not designed for that. They use it because the side effect of this pill is abortion.

Elaborating on who performs abortions, one HCW stated, "They always get help from someone to buy the pills or to use the hanger. However, this person is never a healthcare worker." The major complications overwhelmingly reported by HCWs across the focus groups were exemplified by one HCW stating that "the complications range from hemorrhage, infection, uterine perforation and atony, and even loss of the uterus." This coincides with the complications mentioned by women participating in the focus groups as well.

Legal Concerns About Abortion

The majority of the women in the focus groups gave similar comments about why women did not talk openly about abortion. One woman said,

> It is very hard to know [who has abortions] because they [women] will not tell you. Even though they do it, they will not let you know. They will not let people learn about it. In the future, they can be criticized for having done an abortion.

Women in the focus groups also discussed the role of the government and hospitals in issues related to abortion and asked for a more active role from them. Comments from women in relation to the government's role in abortion included the following: "the hospitals should stop performing abortions"; "the government knows about people who sell pills or knows the places where abortions are performed, they should close them"; and "the government should arrest and put in jail people who perform abortion and those who sell those types of pills."

Many HCWs expressed knowledge of the consequences of abortion and the illicit character of it. One HCW mentioned, "Abortion is illegal in Haiti, if a woman wants to have an abortion it has to be clandestine. If the state knows about it, this woman could be prosecuted." Additionally, another HCW stated, "I think some people do it [abortion], but secretly." Shrouded in fear, the topic of abortion or access to a safe abortion is not openly discussed, as one HCW explained:

> We have to remember that abortion is a clandestine activity. Therefore, if a woman wants to have an abortion, she has to do it in a secret location. Nobody, besides the persons involved in the abortion, will know about it.

One participant noted, "You could try to find out [where they go for abortions] but that will be a waste of time. You will never know."

Discussion

This study is the first qualitative study conducted in Haiti that examines abortion. Our study's findings contribute to the knowledge regarding abortion and have important implications for public health and the reproductive rights of women in Haiti. Considering the lack of research that has targeted abortion, being able to understand the women's and HCWs' beliefs and experiences about abortion is paramount in developing culturally tailored interventions to prevent abortion complications in Haitian women.

Abortion in Haiti is illegal and is a culturally unacceptable practice that remains a taboo subject. The illegality of abortion is related to social stigma, cultural beliefs, and religion (Maternowska, 2006). Despite the fact that abortion is illegal, women participants in this study placed the legal responsibility for abortions on the government, hospitals, and HCWs. In contrast, the HCWs saw the

women as responsible for abortions and therefore believed the women should face the legal ramifications.

The women and HCW participants recognized an increase in the number of abortions performed and the number of serious complications resulting from abortion among the teenage population. This places teenagers at an increased risk of morbidity and mortality in relation to abortions performed in Haiti. This situation is similar to the one described by the United Nations Population Fund (2004).

Because of the illegality of abortion, participants noted that often the abortions are done clandestinely and in unsafe and deplorable conditions in Haiti. This places women at risk for complications, disability, and death (WHO, 2012). Women often resort to herbal remedies and pharmaceutical interventions. Traditional medicine in Haiti is still frequently practiced; at least 20 plants that supposedly have contraceptive and abortifacient properties are reported to be in use, and some women reportedly have used high doses of antimalarial drugs (Prins, Kone, Nolan, & Thatte, 2008). HCWs often do not reach the women until they require postabortion care, and it is routinely provided as part of obstetrical care (Prins et al., 2008). To enable every Haitian woman to have access to high-quality abortion services, before, during, and after the procedure, policies must be developed to protect them. In this regard, policies and the legal environment should encompass protecting the human rights of women and respecting them as individuals, coupled with policies and public health practices that grant women access to high-quality contraceptive and family planning services, regardless of age, socioeconomic status, and location (WHO, 2012).

Conclusions

Unsafe abortions are concentrated in developing countries and those that have judicial systems unfavorable to the legality of abortion; nonetheless, there is a responsibility from healthcare providers to acknowledge their role in protecting women´s health. The results of this study show an urgent need to react to what is happening with women in Haiti. A public health response that incorporates and addresses different dimensions of abortion, engaging women and healthcare providers in public health interventions, is needed.

Haiti's government, international agencies, and HCWs have the unique opportunity to develop and implement sexual health interventions designed for Haitian women, in general, and for teenagers, in particular, to decrease abortions and their complications.

It is imperative to conduct more research related to abortion in order to examine other factors associated with abortion and to gain a better understanding of the links between abortion and sexual health among Haitian women. A quick response can help this vulnerable group, who are experiencing high rates of mortality. This can also serve as a directive to approach this issue in other developing countries in the Caribbean region, particularly from its clinical relevance.

Acknowledgments

The authors gratefully acknowledge the healthcare workers and Haitian women for their cooperation throughout the study. This research was funded by the W.K. Kellogg Foundation under Award No. P3020642 and the Center of Excellence for Health Disparities Research: El Centro, National Institute on Minority Health and Health Disparities of the National Institutes of Health under Award No. P60MD002266.

Clinical Resources

- World Health Organization Haiti (2016). Haiti: http://www.who.int/countries/hti/en/
- Pan American Health Organization. (2014). 11 countries in Latin America and the Caribbean have reduced maternal mortality, new UN data show: http://www.paho.org/hq/index.php?option=com_content&view=article&id=9552%3A2014-11-countries-latin-america-caribbean-reduced-maternal-mortality-new-data-show&Itemid=1926&lang=en
- The World Bank. (2016). GNI per capita, Atlas method (current US$): http://www.worldbank.org/en/country/haiti
- Haiti needs support to restore, rebuild health services after Hurricane Matthew: http://www.paho.org/hq/index.php?option=com_content&view=article&id=12707%3Ahaiti-needs-support-restore-rebuild-health-services-after-hurricane-matthew&Itemid=1926&lang=en
- Zero maternal deaths from hemorrhage: http://www.paho.org/cero-muertes-maternas-hemorragia/?lang=en
- Health Worker Roles in providing safe abortion care and post-abortion contraception: http://www.who.int/reproductivehealth/publications/unsafe_abortion/abortion-task-shifting/en/

References

Berry-Bibee, E., St. Jean, C. J., Telemaque, Y., Nickerson, N., Jamieson, D., & Lathrop, E. (2014). Assessment of induced

abortion practices in urban Haiti: A mixed-methods study. *Contraception*, *90*(3), 299.

Cianelli, R., Mitchell, E., Albuja, L., Wilkinson, C., Anglade, D., Chery, M., & Peragallo, N. (2014). Maternal–child health needs assessment in Haiti. *International Journal of Applied Science and Technology*, *4*(5), 30–38.

Cianelli, R., Wilkinson, C., Mitchell, E., Anglade, D., Nicolas, G., Mitrani, V., & Peragallo, N. (2013). Mental health training experiences among Haitian healthcare workers post-earthquake. *International Nursing Review*, *60*, 528–535.

Editorial: Unsafe abortions: Eight maternal deaths every hour. (2009). *Lancet*, *374*(9698), 1301. Retrieved from http://www.researchgate.net/profile/Susheela_Singh/publication/5910988_Induced_abortion_estimated_rates_and_trends_worldwide/links/0deec51850d369d149000000.pdf

Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288.

International Monetary Fund. (2015). *Haiti: Selected issues*. Country Report No. 15/158. Washington, DC: Retrieved August 18, 2015, from http://www.imf.org/external/pubs/ft/scr/2015/cr15158.pdf

Leung, F.-H., & Savithiri, R. (2009). Spotlight on focus groups. *Canadian Family Physician*, *55*(2), 218–219.

Lofland, J., Snow, D., Anderson, L., & Lofland, L. (2005). *Analyzing social settings: A guide to qualitative observation and analysis* (4th ed.). Beverly, MA: Wadsworth.

Martin, M. (2013, December 5). *Abortion in Haiti: Dangerous and illegal*. Tell Me More [National Public Radio interview]. National Public Radio, Washington, DC. Retrieved from http://www.npr.org/templates/story/story.php?storyId=248990602

Maternowska, C. M. (2006). *Reproducing inequities*. Piscataway, NJ: Rutgers University Press.

Morgan, D. L. (1998). *Planning focus groups*. Thousand Oaks, CA: Sage.

Office of Behavioral and Social Sciences Research, National Institutes of Health. (2001). *Qualitative methods in health research: Opportunities and consideration in application and review*. Retrieved from https://obssr.od.nih.gov/pdf/qualitative.pdf

Pan American Health Organization. (2014). *11 countries in Latin America and the Caribbean have reduced maternal mortality, new UN data show*. Retrieved from http://www.paho.org/hq/index.php?option=com_content&view=article&id=9552%3A2014-11-countries-latin-america-caribbean-reduced-maternal-mortality-new-data-show&Itemid=1926&lang=en

Patton, M. (2001). *Qualitative research and evaluation method* (3rd ed.). Thousand Oaks, CA: Sage.

Prins, A., Kone, A., Nolan, N., & Thatte, N. (2008). *USAID/Haiti maternal and child health and family planning portfolio review and assessment*. Retrieved from http://pdf.usaid.gov/pdf_docs/PDACP887.pdf

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, *23*(4), 334–340.

Sedgh, G., Henshaw, S., Singh, S., Åhman, E., & Shah, I. (2007). Induced abortion: Estimated rates and trends worldwide. *Lancet*, *370*, 1338–1345. Retrieved from http://www.researchgate.net/profile/Susheela_Singh/publication/5910988_Induced_abortion_estimated_rates_and_trends_worldwide/links/0deec51850d369d149000000.pdf

Sundaram, A., Juarez, F., Bankole, A., & Singh, S. (2012). Factors associated with abortion-seeking and obtaining a safe abortion in Ghana. *Studies in Family Planning*, *43*(4), 273–286.

United Nations. (2011). *United Nations publication: Abortion policies: A global review–Haiti 2011*. Retrieved from http://www.un.org/esa/population/publications/abortion/profiles.htm

United Nations Population Fund. (2004). *State of world population, 2004*. Retrieved from http://www.unfpa.org/swp/2004/english/ch9/page5.htm

The World Bank. (2015a). *GNI per capita; Atlas method (current US$) data page*. Retrieved from http://data.worldbank.org/indicator/NY.GNP.PCAP.CD/countries/HT-XJ-XM?display=graph

The World Bank. (2015b). *Haiti data page*. Retrieved from http://data.worldbank.org/country/haiti

World Health Organization. (2012). *Safe abortion: Technical and policy guidance for health systems*. Retrieved from http://apps.who.int/iris/bitstream/10665/70914/1/9789241548434_eng.pdf

World Health Organization. (2015a). *Country statistics*. Retrieved from http://apps.who.int/gho/data/node.main.REPADO39?lang=en

World Health Organization. (2015b). *Maternal mortality in 1990–2013*. Retrieved from http://apps.who.int/gho/data/node.country.country-HTI?lang=en

World Health Organization. (2015c). *Global Health Observatory Data Repository: Density per 1000 Data by country*. Retrieved from http://apps.who.int/gho/data/node.main.A1444?lang=en

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Trajectories of Weight Change and Predictors Over 18-Month Weight Loss Treatment

Yaguang Zheng, PhD, MSN, RN[1], Susan M. Sereika, PhD[2], Cynthia A. Danford, PhD, CRNP, PPCNP-BC, CPNP-PC[3], Christopher C. Imes, PhD, RN[4], Rachel Woodson Goode, MSW[5], Juliet Mancino, MS, RDN[6], & Lora E. Burke, PhD, MPH, FAHA, FAAN[7]

1 Assistant Professor, Boston College, Connell School of Nursing, Chestnut Hill, MA, USA
2 Professor; Director, Center for Research and Evaluation, University of Pittsburgh School of Nursing, Health & Community Systems, and Departments of Biostatistics and Epidemiology in the Graduate School of Public Health, Pittsburgh, PA, USA
3 Assistant Professor, University of Pittsburgh School of Nursing, Health Promotion & Development, Pittsburgh, PA, USA
4 Assistant Professor, University of Pittsburgh School of Nursing, Acute & Tertiary Care, Pittsburgh, PA, USA
5 PhD Candidate, University of Pittsburgh, School of Social Work, Pittsburgh, PA, USA
6 Clinical Research Coordinator, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA
7 Professor, University of Pittsburgh School of Nursing, Health & Community Systems and Department of Epidemiology in the Graduate School of Public Health, Pittsburgh, PA, USA

Key words
Obesity, trajectory, weight change

Correspondence
Dr. Yaguang Zheng, Connell School of Nursing, Boston College, Maloney Hall 369A, 140 Commonwealth Avenue, Chestnut Hill, MA 02467. E-mail: yaguang.zheng@bc.edu.

Accepted December 7, 2016

doi: 10.1111/jnu.12283

Abstract

Background: Obesity research has typically focused on weight change patterns using the whole sample in randomized clinical trials (RCTs), ignoring subsets of individuals with varying weight change trajectories (e.g., continuing to lose, or maintaining weight). The purpose was to explore possible trajectories of weight change and their associated predictors.

Methods: We conducted a secondary analysis of data from two RCTs using standard behavioral treatment for weight loss. Group-based trajectory modeling was used to identify distinct classes of percent weight change trajectories over 18 months.

Results: The sample (N = 338) was primarily female (85.2%), White (73.7 %), 45.7 ± 9.0 years old, with 15.6 ± 2.8 years of education. Three trajectory groups were identified: good responders (>15% weight loss), fair responders (5%–10% weight loss), and poor responders (<5% weight loss). The good responders had a significantly larger decrease in perceived Barriers to Healthy Eating subscale scores than the fair and poor responders ($p < .01$). Compared to the poor responders, there was a significant decrease in fat gram intake in the good responders ($p = .01$).

Conclusions: Good responders differed from poor responders in decreasing their perceived barriers to healthy eating (e.g., managing emotions, social support, and daily mechanics of adopting a healthy diet) and reducing fat intake. Good responders differed from fair responders in perceived barriers to healthy eating.

Clinical Relevance: Clinicians need to focus on how we can assist those who are being unsuccessful in adopting some of the behaviors observed among those who have experienced successful weight loss and maintainers.

The prevalence of obesity has been at an epidemic level in the United States for over a decade (Flegal, Carroll, Kit, & Ogden, 2012; Samaranayake, Ong, Leung, & Cheung, 2012). Approximately two thirds of adults are overweight (body mass index [BMI] of 25–29.9 kg/m2) or obese (BMI ≥ 30 kg/m^2), with one third being obese (Main,

Rao, & O'Keefe, 2010). Obesity (BMI ≥ 30 kg/m^2) is associated with excess mortality and is a major risk factor for the development of diabetes mellitus, sleep-disordered breathing, and cardiovascular disease, including coronary heart disease, stroke, and heart failure (Brown, Fujioka, Wilson, & Woodworth, 2009). Given the high prevalence of overweight and obesity and its profound impact on overall health, a high percentage of U.S. adults (57% of women and 40% of men) are currently trying to lose weight (Yaemsiri, Slining, & Agarwal, 2011). However, long-term maintenance of weight loss is challenging (Butryn, Webb, & Wadden, 2011; Katan, 2009).

Because of the high rate of recidivism following weight loss, it is important to explore the weight change patterns in behavioral weight loss clinical trials. Evidence has demonstrated that most participants tend to regain weight after weight loss treatment (Butryn et al., 2011; Katan, 2009), which is the typical weight change pattern observed when using the whole sample of most reported studies. However, this may ignore the subsets of individuals with distinct trajectories of weight change (e.g., continuing to lose or maintaining weight), since not each individual follows the typical weight change pattern. Given that long-term maintenance of weight loss is challenging in any weight loss treatment, it would be beneficial to develop intervention strategies to prevent weight regain if we could identify clusters of individuals who experience different weight loss and maintenance trajectories, and examine the differences between those who regained and those who maintained.

Currently, several studies have demonstrated trajectories of weight change among children, yet no RCTs have explored the trajectories of weight change among adults (Bisset, Foumier, Pagani, & Janosz, 2013; Carter, Dubois, Tremblay, Taljaard, & Jones, 2012). However, there is limited knowledge to explain how the pattern of change in body weight varies with key dimensions of demographic variables (e.g., age, race or ethnicity, gender, education, income, employment), calorie and fat intake, or behavioral factors including perceived barriers to healthy eating and binge eating habits. This study had two specific aims: (a) explore trajectories of percent weight change by analyzing 18 months of longitudinal data from two RCTs for adult weight loss treatment; and (b) examine how the pattern of weight change varies with baseline demographic, dietary, and behavioral factors.

Methods

Research Design

This study was a secondary analysis of 18-month data pooled from two RCTs using standard behavioral treatment for weight loss. The Paving the Road to Everlasting Food and Exercise Routine (PREFER) Trial (N = 176) was an 18-month, 2 × 2 design, RCT examining treatment preference (yes or no) and type of diet (standard calorie- and fat-restricted vs. lacto-ovo-vegetarian; Burke et al., 2006). The Self-monitoring and Recording using Technology (SMART) Trial (N = 210) was a 24-month, three-group RCT comparing the effect of three methods of self-monitoring dietary intake and physical activity on weight loss (paper diary vs. personal digital assistant [PDA] vs. PDA + feedback; Burke et al., 2009, 2012). All participants received standard behavioral treatment, including group sessions, goal setting for daily calorie and fat gram intake and weekly exercise, and self-monitoring of dietary intake and physical activity. Participants' calorie goals were based on gender and baseline weight (women: 1,200 kcal for <200 pounds or 1,500 kcal for <200 pounds; men: 1,500 kcal for <200 pounds or 1,800 kcal for ≥200 pounds) and were asked to limit their fat intake to 25% of their calories. Their exercise goals were in weekly minutes (e.g., to achieve 150 min of physical activity every week by the third month and 180 min by the sixth month). Participants received compensation for their involvement in the trials. The details of each trial and the justification for combining trials have been reported elsewhere (Burke et al., 2006, 2009, 2012; Goode et al., 2016). In order to use the same duration for the trajectory, we truncated the data at 18 months, 6 months before the end of the SMART study.

Sample

The final sample included 375 adults. Because 11 participants in the SMART study initially participated in the PREFER study, we excluded them from data analysis to avoid violating the assumption of independence of subjects. Eligible participants were between 18 and 59 years old, had a BMI of 27 to 43 kg/m^2, recorded their dietary intake for 5 days during the screening process, and had no major medical or psychiatric conditions (e.g., diabetes, heart failure, recent myocardial infarction). The exclusion criteria included participation in a weight loss study in the past 6 months or current use of weight loss medications, presence of an unstable condition requiring physician-supervised diet or exercise, and pregnancy or physical limitations precluding ability to exercise.

Measures

Fixed risk factors. These factors were measured only at baseline. Sociodemographic data were collected

using the Socio-demographic and Lifestyle Questionnaire, which was a self-administered, standardized questionnaire. Data included age, gender, education, race, employment, and household income. Baseline BMI was calculated by weight (kg)/height (m^2), where weight and height were objectively measured during baseline assessment.

Binge eating. The Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982) was developed to identify binge eating behaviors within an obese population and used during the screening phase for both studies. This yielded a continuous measure of binge eating pathology of 0 to 46. Scores of ≥27 have conventionally served as a cutoff value for identifying the presence of severe binge eating (Marcus, Moulton, & Greeno, 1995) and study exclusion.

Time-dependent predictors. These variables changed over time. They were measured at baseline, 6, 12, and 18 months.

Calorie and fat intake. Dietary intake was assessed through two 24-hr dietary recalls, which were conducted using the Nutrition Data System for Research (NDSR), a comprehensive nutrient calculation software program maintained by the Nutrition Coordinating Center at the University of Minnesota (Buzzard, Schakel, & Ditter-Johnson, 1995). The NDSR database contains over 18,000 foods, 7,000 brand names, and a number of ethnic foods. These data provided total calories, fat grams, and 172 other nutrients for our analysis. The dietary recalls were conducted at baseline, 6, 12, and 18 months by staff with nutrition expertise and trained in this procedure. The recalls were unannounced and conducted on one weekday and one weekend day.

Perceived barriers. The Barriers to Healthy Eating (BHE) Scale, a 22-item questionnaire, assessed perceived barriers. The response scale ranged from 1 (*no problem*) to 5 (*a very important problem*) to rate various situations or conditions related to following the diet (e.g., feelings of deprivation, complexity of the regimen, and cost of foods). The higher the score, the more barriers related to following a healthy eating plan. The BHE has three subscales: emotional barriers (e.g., difficult to motivate myself to eat appropriately, resisting tempting high fat and high calories is difficult), daily mechanics of following a healthy eating plan (e.g., appropriate foods available, difficult to find time to plan appropriate meals, cost of food low in fat and calories), and social support (e.g., my family does not support my efforts to change my diet, my friends don't support me when I try to change my eating). This tool has good reliability (test–retest reliability, $r = .89$; internal consistency, Cronbach's alpha = .86) and predictive validity with weight loss at 6 months ($r = .28$) in a previous study (Burke, Kim, & Music, 2004). These data were assessed every 6 months.

Dependent variable. Weight. A digital scale (Tanita Corporation of America, Inc., Arlington Heights, IL, USA) was used to objectively measure weight at baseline, 6, 12, and 18 months. Participants wore light clothing, no shoes, and had fasted overnight.

Data Analysis

Descriptive statistical analyses were conducted using SPSS software (version 21, SPSS Inc., Chicago, IL, USA) for Windows. Statistical significance was set at .05 for two-sided hypothesis testing. The variables, including weight, calorie and fat intake, and BHE scores, were transformed into percent change relative to baseline levels ($t = 0$). For instance, percent weight change was defined as $([\text{weight}_t - \text{weight}_0]/\text{weight}_0) \times 100\%$, $t = 6$, 12, 18 months. Continuous variables (percent changes in weight, fat intake, and calorie intake at each time point, age, education, BMI) were reported as means with standard deviations. Categorical variables (gender, race, employment, and household income) were reported as frequency, counts, and percentages. Normality assumption and outliers were checked. The amount and pattern of missing data were also checked. Individuals with missing weight data at all follow-up time points were excluded ($n = 37$ [9.9%]) from the analyses, resulting in 338 cases in the final trajectory analysis. There were no statistical differences between those included and those excluded on baseline demographic variables except education. Individuals with missing data at all follow-up time points had lower years of education (14.00 ± 2.10) than the remaining individuals (15.61 ± 2.84; $p < .001$).

The group-based trajectory modeling, TRAJ procedure (PROC TRAJ) in SAS version 9.3 (SAS Institute, Cary, NC, USA), was used to identify distinct classes of trajectories of percent weight change over 18 months. Group-based trajectory models (sometimes called latent class growth analysis or semiparametric finite mixture modeling) are designed to identify clusters of individuals following similar progressions of some behaviors or outcomes over age or time (Nagin, 1999). Group-based trajectory modeling assumes there is a certain number of discrete underlying groups in the sample, and that each group has its own intercept, slope, or shape (Nagin, 1999). These trajectory groups are used to help us understand the etiological underpinnings of different developmental trajectories (Jones & Nagin, 2007).

Table 1. Sample Characteristics at Baseline ($N = 338$)

Characteristic	*n*	Mean (*SD*) or %
Age (years)	338	45.7 (9.0)
Education (years)	338	15.6 (2.8)
Body mass index (kg/m^2)	338	33.9 (4.3)
Gender		
Female	288	85.21
Ethnicity		
White	249	73.67
Employment		
Full time	277	82.44
Marital status		
Currently married/living with partner or significant other	227	67.36
Never married	55	16.32
Widowed/separated/divorced	55	16.32
Household income		
≤$30,000	52	15.71
$30,000 to $50,000	83	25.08
>$50,000	196	59.21

In the TRAJ procedure in SAS, the dependent variable was percent weight change at each time point, which was modeled as a function of time; a censored normal model was performed since the dependent variable was normally distributed. The censored normal model is appropriate for continuous data that are approximately normally distributed, with or without censoring (Jones, Nagin, & Roeder, 2001). The appropriate number of groups and the shape of weight trajectories were determined by comparing Bayesian information criteria (BIC) for competing models with one to four groups; the model with the less negative BIC was considered to be the best fit (Nagin, 2005). After selection of the number of groups, the trajectory shapes for each group were determined by comparing changes in BIC and the significance of regression coefficients. We merged the data of the SMART and PREFER studies to conduct trajectory analysis for two reasons: (a) there were no demographic differences in the two samples; and (b) the SMART and PREFER trials had the same patterns of percent weight change.

Once the final model of trajectory analysis was selected, the differences in baseline demographic data and dietary and behavioral factors across the weight trajectory groups were examined. Contingency table analyses with chi-square tests of independence, general linear modeling, or linear mixed modeling were performed, where the trajectory group of weight change was treated as a grouping variable. Since the interventions in the SMART and PREFER trials were not exactly the same, we added a random effect (study group) into general linear modeling or linear mixed modeling to adjust for study difference.

Results

Demographic Characteristics

Table 1 summarizes the description of baseline demographic characteristics. The sample included 338 adults, which were mostly female (85.2%), White (73.7 %), 45.7 ± 9.0 years old with 15.6 ± 2.8 years of education, and a BMI of 33.9 ± 4.3 kg/m^2. **Table 2** provides details on time-dependent variables.

Trajectories of Percent Weight Change

According to the BIC tests and the significance of the parameter, the three-group model best fit the data. As shown in **Figure 1**, three trajectory groups were identified: good responders: >15% weight loss; fair responders: 5%–10% weight loss; and poor responders: <5% weight loss. All three groups regained weight after 12 months. On average, 14.5% of the participants were classified as good responders. Trajectory of weight change over time was estimated to be quadratic ($\beta_0 = -8.21$, $\beta_1 = -12.59$, $SE = 3.04$; $\beta_2 = 3.13$, $SE = 0.75$; $p < 0.001$). The weight loss was 17.7% from baseline to 6 months, with a continuing loss of 3% at 12 months and then a regain of 3% of total weight loss from 12 to 18 months. The largest percentage (52.4%) was classified as fair responders. Trajectory of weight change over time was estimated to be quadratic in this group ($\beta_0 = -6.60$, $\beta_1 = -3.12$, SE = 1.69; $\beta_2 = 1.18$, $SE = 0.42$; $p = .005$). Weight losses at 6, 12, and 18 months were 8.5%, 8.1% and 5.3%, respectively. Approximately a third (33.1%) of the participants were classified as poor responders, whose weight loss was 1.76% and 0.18% at 6 and 12 months, with regain beyond the baseline weight (2.2%) at 18 months. Trajectory of weight change over time was estimated to be linear in this group ($\beta_0 = -3.69$, $\beta_1 = 1.94$, $SE = 0.31$; $p < .001$).

Differences in Demographic, Dietary, and Behavioral Factors by Weight Trajectory Groups

There were no significant differences in demographic factors and BES by weight trajectory groups (**Table 3**), while the good responders had a higher level of education than the fair responders and poor responders ($p = .01$). Overall, good responders had a significantly larger decrease in BHE subscale scores ($p < .01$) than the fair responders and poor responders (**Table 4**). There was a significant decrease in fat gram intake in the good responders ($p = .01$) compared with the poor responders, while there was no difference in the decrease in fat intake between the fair responders when compared with the good responders ($p = .16$) and poor responders

Table 2. Description of Time-Dependent Variables at Each Time (Mean [*SD*]; $N = 338$)

			Barriers to healthy eating		
Variables	Calorie (kcal)	Fat (g)	Emotion	Daily mechanics	Social support
Baseline	2,082.75 (685.65)	82.15 (35.73)	34.55 (8.09)	20.34 (6.42)	6.34 (2.46)
6-month	1,506.72 (470.86)	47.00 (23.43)	29.76 (8.90)	16.69 (5.45)	5.92 (2.39)
12-month	1,579.66 (501.33)	53.47 (27.35)	30.40 (9.28)	16.75 (5.51)	6.19 (2.58)
18-month	1,587.72 (482.24)	55.04 (27.03)	31.40 (9.24)	17.10 (5.55)	6.23 (2.68)

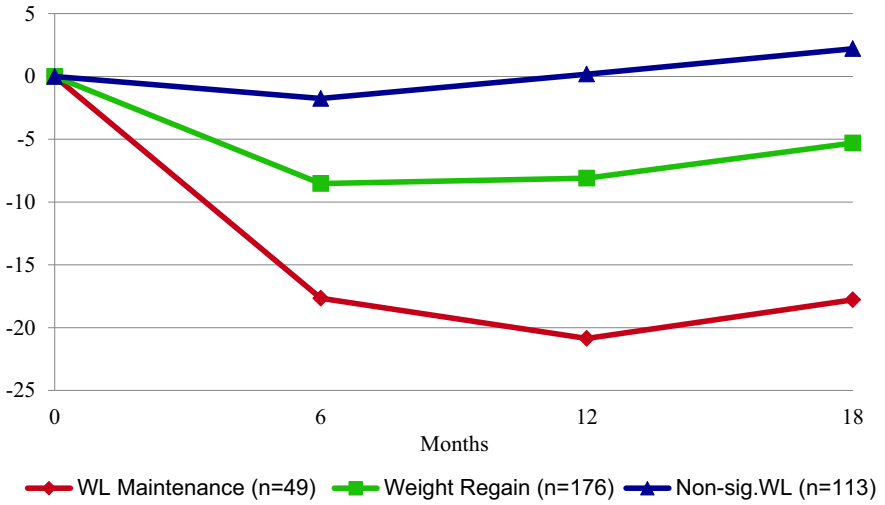

Figure 1. Percent weight changes relative to baseline for each trajectory group. Non-sig. = nonsignificant; WL = weight loss.

($p = .09$). Also, there were no significant differences in the reduction in calorie intake between good responders when compared with fair responders ($p = .65$) and poor responders ($p = .80$), there was also no significant differences in the reduction in calorie intake between fair responders and poor responders ($p = .81$).

Discussion

To the best of our knowledge, this is the first study that quantitatively depicted the long-term trajectory of weight change in samples from two 18-month clinical trials for weight loss treatment. Not all participants followed the same pattern of weight change. Three clusters of weight change were identified: individuals who lost and maintained weight (good responders), individuals who regained weight after losing weight (fair responders), and individuals whose weight had no significant clinical change throughout the study (poor responders). The good responders were distinguished from the fair responders and poor responders by decreases in the level of perceived barriers related to managing emotions, the availability of social support, and challenges by the daily mechanics of adopting a healthy diet.

In our study, a small number of participants maintained their weight (good responders), while almost half of the sample followed the weight regain trajectory (fair responders) during the 18-month weight loss treatment period. Although published work has reported certain factors as contributing to weight loss maintenance (Thomas, Bond, Phelan, Hill, & Wing, 2014), there were some noted limitations including self-reported weight, and none of the studies temporally examined changes in behavior factors. Our study examined the differences between individuals who maintained weight and who regained weight in prospective weight loss trials. Our study also examined temporally contiguous changes in behavior on weight trajectories. Our results indicated that larger initial weight losses were associated with better weight maintenance after weight loss, which is consistent with other studies (Knowler et al., 2009; Thomas et al., 2014; Wing, 2010). In our study, higher education was a predictor of weight loss maintenance, which has been reported previously (Kraschnewski et al., 2010). We found that individuals who maintained weight loss showed a significantly greater decrease in perceived barriers to healthy eating than whose who regained, which is consistent with the findings reported by

Table 3. Differences in Fixed Factors by Weight Trajectory Group (Mean [*SD*] or *n* [%])

	Good responders ($n = 49$)	Fair responders ($n = 176$)	Poor responders ($n = 113$)	*p*
Age (years)	46.22 (1.28)	45.95 (0.68)	45.12 (9.30)	.36
Education (years)	16.73 (0.40)	15.47 (0.21)	15.35 (0.26)	.01
BMI (kg/m_2)	32.88 (3.78)	34.37 (4.50)	33.83 (4.20)	.13
BES	13.73 (7.42)	16.15 (7.55)	15.31 (7.79)	.23
Gender	40 (81.63)	149 (84.66)	99 (87.61)	.59
Female				
Ethnicity				
White	40 (81.63)	131 (74.43)	78 (69.03)	.23
Employment				
Full time	40 (81.63)	143 (81.71)	94 (83.93)	.88
Marital status				
Currently married/living with partner or significant other	34 (69.39)	119 (67.61)	74 (66.07)	.72
Never married	8 (16.33)	25 (14.20)	22 (19.64)	
Widowed/separated/divorced	7 (14.29)	32 (18.18)	16 (14.29)	
Household income				
≤$30,000	6 (12.24)	27 (15.52)	19 (17.59)	.74
$30,000 to $50,000	10 (20.41)	44 (25.29)	29 (26.85)	
>$50,000	33 (67.35)	103 (20.41)	60 (55.56)	

Note. BES = Binge Eating Scale; BMI = body mass index.

Table 4. Differences on Percent Change in Time-Dependent Variables by Weight Trajectory Group (Mean [*SE*])

					p values					
		Good responders ($n = 49$)	Fair responders ($n = 176$)	Poor responders ($n = 113$)	Group × time	Group	Time	a vs. b	a vs. c	b vs. c
Calorie	6 months	−26.79 (3.81)	−25.90 (2.02)	−16.20 (2.53)	.06	.90	<.001	.65	.80	.81
	12 months	−19.61 (4.05)	−24.16 (2.20)	−13.12 (2.80)						
	18 months	−20.49 (4.42)	−18.62 (2.42)	−17.35 (3.10)						
Fat	6 months	−44.34 (5.26)	−39.46 (2.80)	−24.35 (3.50)	.07	.03	<.001	.16	.01	.09
	12 months	−39.18 (5.50)	−33.80 (3.00)	−13.94 (3.81)						
	18 months	−33.42 (6.38)	−23.93 (3.49)	−20.32 (4.48)						
BHE emotion	6 months	−29.64 (3.79)	−13.37 (2.02)	0.50 (2.52)	<.001	<.001	<.001	<.001	<.001	<.001
	12 months	−26.42 (4.47)	−10.51 (2.43)	3.74 (3.09)						
	18 months	−26.93 (4.39)	−5.95 (2.38)	6.21 (3.06)						
BHE daily mechanics	6 months	−25.64 (4.41)	−12.86 (2.39)	1.76 (3.06)	<.001	<.001	<.001	<.001	<.001	<.001
	12 months	−27.77 (4.59)	−14.56 (2.50)	0.88 (3.17)						
	18 months	−26.20 (4.44)	−15.99 (2.36)	−2.09 (2.95)						
BHE social support	6 months	−16.24 (6.35)	−1.35 (3.38)	14.26 (4.23)	.001	<.001	.02	.05	.004	.13
	12 months	−9.74 (7.08)	4.79 (3.86)	20.23 (4.92)						
	18 months	−16.74 (7.22)	7.53 (3.92)	21.32 (5.03)						

Note. a = good responders; b = fair responders; c = poor responders; BHE = Barriers to Healthy Eating; all the models adjusted study group.

Befort and colleagues (2008), that unsuccessful weight maintainers experienced more perceived barriers to healthy eating than successful maintainers. We found no significant difference in the decrease in calorie and fat intake among those in the good responders compared with the fair responders. This finding is inconsistent with data from the National Weight Control Registry that purports that individuals who report maintaining a consistent dietary plan are more likely to maintain their weight loss (Wing & Phelan, 2005). From the current data, increases in energy intake from fat were associated with greater weight regain (Thomas et al., 2014). The difference in results might be partially explained by under-reporting of the calorie or fat intake in the fair responders group. Another explanation might be due to greater increases in physical activity in the good responders group than in the fair responders, but it is impossible for us to examine these behavioral changes since we used different instruments in the two trials.

In our study, 33% of participants demonstrated no significant weight loss over time (poor responders). Our results revealed that only a slight weight loss initially greatly increased the likelihood that a participant experienced no significant weight loss or subsequently increased their weight. There were no significant decreases in this subgroup regarding barriers related to managing emotions, the availability of social support and daily mechanics (e.g., appropriate foods available, difficult to find time to plan appropriate meals, cost of food low in fat and calories). This is consistent with an earlier study that reported declines in perceived barriers to healthy eating (e.g., lack of control and lack of time) were significantly associated with greater weight loss over 12 months in a behavioral weight loss trial (Welsh et al., 2011). In our study, individuals in this group were more likely to have difficulties losing weight, even in the early treatment phase. A partial explanation may be that they did not adhere to the treatment regimen or there were factors that impeded them from engaging in the intervention and associated weight loss strategies.

The results of the present study should be interpreted in light of some important limitations. The sample was well educated, predominantly White, female, and employed full time, which precludes us from generalizing the findings to males and other ethnic or less educated groups. Due to the fact that we combined data from two studies but used different instruments to measure certain variables (e.g., self-efficacy, the level of physical activity) in the two studies, we were not able to assess the role of these factors in predicting weight change trajectory.

Strengths of this study include the use of prospective data. This is the first study to examine the trajectories of percent weight change based on 18-month weight loss treatment data. We demonstrated that not all participants follow the same pattern of weight change, which provides insight into the full picture of participants' weight loss. The good responders were distinguished from the fair responders and poor responders by the level of decreases in fat consumption and perceived barriers related to managing emotions, the availability of social support, and challenges by the daily mechanics of adopting a healthy diet.

In summary, participants in long-term behavioral weight loss studies experience different weight change patterns. Factors that may influence the course of weight loss include fat consumption and barriers to healthy eating, which have several dimensions that include emotional eating, social support, and the daily mechanics of selecting and preparing a healthy diet. Our results suggest that there is a pattern or cluster of behaviors associated with successful and unsuccessful weight loss. Researchers and clinicians need to be aware of these and focus on how we can assist those who are unsuccessful in adopting some of the behaviors observed among the successful maintainers. Future research needs to develop strategies to identify the unsuccessful individuals early in treatment and facilitate their adopting better behaviors that will ensure improved success at weight loss.

Acknowledgments

This research was funded by NIH, NIDDK RO1 DK5863; NIH, NIDDK #R01-DK071817; MidCareer Mentorship Award NIH K24NR010742; Data Management Core of the Center for Research in Chronic Disorders, NIH, NINR #P30-NR03924; General Clinical Research Center, NIH, NCRR-GCRC #M01-RR00056; Clinical Translational Research Center, NIH, NCRR-CTSA #UL1-RR024153; NIH, NINR #K24-NR010742 for L.E. Burke at the University of Pittsburgh.

Clinical Resources

- Centers for Disease Control and Prevention. Prevention strategies and guidelines: https://www.cdc.gov/obesity/resources/strategies-guidelines.html
- Obesity Society. Clinical resources: http://www.obesity.org/publications/clinical-resources
- Obesity Society. TOS, AHA, ACC release new obesity treatment guidelines: http://www.obesity.org/obesity/news/press-releases/tos-aha

References

Befort, C. A., Stewart, E. E., Smith, B. K., Gibson, C. A., Sullivan, D. K., & Donnelly, J. E. (2008). Weight maintenance, behaviors and barriers among previous participants of a university-based weight control program. *International Journal of Obesity (London)*, *32*(3), 519–526. doi:10.1038/sj.ijo.0803769

Bisset, S., Foumier, M., Pagani, L., & Janosz, M. (2013). Predicting academic and cognitive outcomes from weight status trajectories during childhood. *International Journal of Obesity (London)*, *37*(1), 154–159. doi:10.1038/ijo.2012.106

Brown, W. V., Fujioka, K., Wilson, P. W., & Woodworth, K. A. (2009). Obesity: Why be concerned? *American Journal of Medicine*, *122*(4 Suppl. 1), S4–S11. doi:10.1016/j.amjmed.2009.1001.1002

Burke, L. E., Choo, J., Music, E., Warziski, M., Styn, M. A., Kim, Y., & Sevick, M. A. (2006). PREFER study: A randomized clinical trial testing treatment preference and two dietary options in behavioral weight management—Rationale, design and baseline

characteristics. *Contemporary Clinical Trials*, *27*(1), 34–48. doi:10.1016/j.cct.2005.08.002

Burke, L. E., Kim, Y., & Music, E. (2004). The barriers to healthy eating scale: Psychometric report. *Annals of Behavioral Medicine*, *27*(Suppl.), S101.

Burke, L. E., Styn, M. A., Glanz, K., Ewing, L. J., Elci, O. U., Conroy, M. B., … Sevick, M. A. (2009). SMART trial: A randomized clinical trial of self-monitoring in behavioral weight management—Design and baseline findings. *Contemporary Clinical Trials*, *30*(6), 540–551. doi:10.1016/j.cct.2009.07.003

Burke, L. E., Styn, M. A., Sereika, S. M., Conroy, M. B., Ye, L., Glanz, K., … Ewing, L. J. (2012). Using mHealth technology to enhance self-monitoring for weight loss: A randomized trial. *American Journal of Preventive Medicine*, *43*(1), 20–26.

Butryn, M. L., Webb, V., & Wadden, T. A. (2011). Behavioral treatment of obesity. *Psychiatric Clinics of North America*, *34*(4), 841–859. doi:10.1016/j.psc.2011.08.006

Buzzard, I. M., Schakel, S. F., & Ditter-Johnson, J. (1995). *Quality control in the use of food and nutrient databases for epidemiologic studies*. Arlington, VA: AOAC International.

Carter, M. A., Dubois, L., Tremblay, M. S., Taljaard, M., & Jones, B. L. (2012). Trajectories of childhood weight gain: The relative importance of local environment versus individual social and early life factors. *PLoS One*, *7*(10), e47065. doi:10.1371/journal.pone.0047065

Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999–2010. *Journal of the American Medical Association*, *307*(5), 491–497. doi:10.1001/jama.2012.39

Goode, R. W., Ye, L., Sereika, S. M., Zheng, Y., Mattos, M., Acharya, S. D., … Burke, L. E. (2016). Socio-demographic, anthropometric, and psychosocial predictors of attrition across behavioral weight-loss trials. *Eating Behaviors*, *20*, 27–33. doi:10.1016/j.eatbeh.2015.11.009

Gormally, J., Black, S., Daston, S., & Rardin, D. (1982). The assessment of binge eating severity among obese persons. *Addictive Behaviors*, *7*(1), 47–55.

Jones, B. L., & Nagin, D. S. (2007). Advances in group-based trajectory modeling and an SAS procedure for estimating them. *Sociological Methods & Research*, *35*(4), 542–571.

Jones, B. L., Nagin, D. S., & Roeder, K. (2001). A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research*, *29*(3), 374–393.

Katan, M. B. (2009). Weight-loss diets for the prevention and treatment of obesity. *New England Journal of Medicine*, *360*(9), 923–925. doi:10.1056/NEJMe0810291

Knowler, W. C., Fowler, S. E., Hamman, R. F., Christophi, C. A., Hoffman, H. J., Brenneman, A. T., … Nathan, D. M. (2009). 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet*, *374*(9702), 1677–1686. doi:10.1016/S0140-6736(09)61457-4

Kraschnewski, J. L., Boan, J., Esposito, J., Sherwood, N. E., Lehman, E. B., Kephart, D. K., & Sciamanna, C. N. (2010). Long-term weight loss maintenance in the United States. *International Journal of Obesity (London)*, *34*(11), 1644–1654. doi:10.1038/ijo.2010.94

Main, M. L., Rao, S. C., & O'Keefe, J. H. (2010). Trends in obesity and extreme obesity among US adults. *Journal of the American Medical Association*, *303*(17), 1695–1696. doi:10.1001/jama.2010.517

Marcus, M. D., Moulton, M. M., & Greeno, C. G. (1995). Binge eating onset in obese patients with binge eating disorder. *Addictive Behaviors*, *20*(6), 747–755.

Nagin, D. S. (1999). Analyzing developmental trajectories: Semi-parametric, group-based approach. *Psychological Methods*, *4*, 139–157.

Nagin, D. S. (2005). *Group-based modeling of development*. Cambridge, MA: Harvard University Press.

Samaranayake, N. R., Ong, K. L., Leung, R. Y., & Cheung, B. M. (2012). Management of obesity in the National Health and Nutrition Examination Survey (NHANES), 2007–2008. *Annals of Epidemiology*, *22*(5), 349–353. doi:10.1016/j.annepidem.2012.01.001

Thomas, J. G., Bond, D. S., Phelan, S., Hill, J. O., & Wing, R. R. (2014). Weight-loss maintenance for 10 years in the national weight control registry. *American Journal of Preventive Medicine*, *46*(1), 17–23. doi:10.1016/j.amepre.2013.08.019

Welsh, E. M., Jeffery, R. W., Levy, R. L., Langer, S. L., Flood, A. P., Jaeb, M. A., & Laqua, P. S. (2011). Measuring perceived barriers to healthful eating in obese, treatment-seeking adults. *Journal of Nutrition Education and Behavior*, *44*(6), 507–512. doi:10.1016/j.jneb.2010.06.005

Wing, R. R. (2010). Long-term effects of a lifestyle intervention on weight and cardiovascular risk factors in individuals with type 2 diabetes mellitus: Four-year results of the Look AHEAD trial. *Archives of Internal Medicine*, *170*(17), 1566–1575. doi:10.1001/archinternmed.2010.334

Wing, R. R., & Phelan, S. (2005). Long-term weight loss maintenance. *American Journal of Clinical Nutrition*, *82*(1 Suppl.), 222S–225S.

Yaemsiri, S., Slining, M. M., & Agarwal, S. K. (2011). Perceived weight status, overweight diagnosis, and weight control among US adults: The NHANES 2003–2008 Study. *International Journal of Obesity (London)*, *35*(8), 1063–1070. doi:10.1038/ijo.2010.229

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

An Integrative Review of Biological Variants and Chronic Stress in Emerging Adults With Chronic Conditions

Anne L. Ersig, PhD, RN[1], & Angela R. Starkweather, PhD, RN, ACNP-BC, CNRN, FAAN[2]

1 *Gamma*, Nurse Researcher, Center for Pediatric Nursing Research & Evidence Based Practice, The Children's Hospital of Philadelphia, Philadelphia, PA, USA
2 Professor, The University of Connecticut, School of Nursing, Storrs, CT, USA

Key words
Adolescents, anxiety, chronic health conditions, emerging adults, self-management, stress, transition to adulthood

Correspondence
Dr. Anne L. Ersig, Center for Pediatric Nursing Research, The Children's Hospital of Philadelphia, Philadelphia, PA 19104. E-mail: ersiga@email.chop.edu

Accepted December 9, 2016

doi: 10.1111/jnu.12281

Abstract

Purpose: The purpose of this integrative review was to evaluate and synthesize studies that incorporated biological measures and examined their associations with chronic stress and anxiety in adolescents and emerging adults with chronic health conditions.
Design: An integrative literature review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement to identify studies published between 2005 and 2015.
Methods: Using key terms, three databases (PubMed/Medline, PsycInfo and the Cumulative Index to Nursing and Allied Health Literature) were searched by a research librarian. Additional publications with relevance to the topic were identified from citing and cited literature. The full text of 61 publications was reviewed. The final group of articles analyzed for this review included 36 peer-reviewed publications and meeting abstracts.
Findings: Studies varied considerably in characteristics, theoretical frameworks, phenotypes of interest, and study measures. Few studies evaluated genomic variants; those that did often examined small samples and a limited number of biological factors.
Conclusions: Studies of chronic stress and anxiety in adolescents and emerging adults with chronic health conditions are currently limited in scope and impact. A more comprehensive approach will facilitate translation into practice to improve short- and long-term health outcomes.
Clinical Relevance: Precision and genomic healthcare initiatives support the relevance of this work for nurses in all areas of clinical practice. Genomic testing is expanding to include individuals in all age groups, with and without diagnosed conditions. As psychological and behavioral phenotypes may influence self-management outcomes of adolescents and emerging adults with chronic health conditions, further research in this area is warranted.

All adolescents and emerging adults (AEAs; 13–29 years old; Arnett, 2007) face changes in many areas of their lives; those with childhood-onset chronic health conditions (CHCs) face additional challenges. One nearly universal transition is the shift to independent living. AEAs with CHCs must simultaneously take primary responsibility for CHC management. Individual experiences vary due to differences in individual, interpersonal, and environmental context.

Growing up with a CHC can lead to chronically elevated levels of stress and anxiety (Turner-Cobb, 2013). Life events and more acute stressors, such as the often-simultaneous transition to independent living and condition self-management, lead to acute stress and anxiety. This may be particularly evident in AEAs who relied on family members for CHC management prior to transition (Evans, 2003; Juster et al., 2011; Offidani & Ruini, 2012). Elevated chronic stress and anxiety are

associated with poor mental and physical health outcomes (Beckie, 2012; Juster et al., 2011), as well as less effective acute stress response (Juster, McEwen, & Lupien, 2010; McEwen & Getz, 2013). Predisposition to higher stress and anxiety may further limit effective response to transition-related stress (Bosk, 2011; Sansom-Daly, Peate, Wakefield, Bryant, & Cohn, 2012; Turkel, 2007) and influence mental and physical health. Thus, AEAs with CHCs, who may experience both elevated chronic stress and anxiety and less effective responses to acute stress, are at increased risk of poor outcomes compared to AEAs without CHCs (Modi et al., 2012; Sansom-Daly et al., 2012; Turkel, 2007).

Psychological, behavioral, and biological differences underlie individual variability in chronic stress, anxiety, and poor outcomes (Offidani & Ruini, 2012). Identifying factors associated with this variability in AEAs is essential for improving outcomes, particularly during periods of transition (Ferro, Gorter, & Boyle, 2015). Multiple studies have examined behavioral and psychological factors associated with high stress and anxiety, but few have examined biological traits. Identifying these could facilitate identification of those at risk of poor transition outcomes, inform development of more effective interventions, and aid delivery of personalized self-management strategies (Offidani & Ruini, 2012).

Self-management interventions designed to improve outcomes are typically applied broadly, without considering unique individual context. The most widely used is the Chronic Disease Self-Management Program (CDSMP; Lorig et al., 2001), although its effectiveness varies. The one-size-fits-all approach to management could partially explain limited effects (Newbould, Taylor, & Bury, 2006; Ritter, Lee, & Lorig, 2011). A more individualized, or targeted, approach would incorporate contextual information. Individual, interpersonal, and environmental factors can affect CHC self-management opportunities, approaches, and outcomes, as well as effectiveness of interventions.

Examining biological variants associated with chronic stress and anxiety will facilitate identification of those who may be at increased risk of adverse outcomes during and after critical developmental transitions. Summarizing variants examined across studies will provide a core set of biological markers researchers can use in the future to develop studies that build on and add to prior work. Of particular interest to nurses is the development of personalized interventions designed to alleviate chronic stress and anxiety; learning more about biological markers associated with these outcomes will facilitate their development and testing. The purpose of this integrative review was to evaluate and synthesize studies that incorporated biological measures and examined their associations with chronic stress and anxiety in AEAs with CHCs. While AEAs with CHCs are the population of interest for this review, the identification of biological factors associated with chronic stress may be of interest to researchers focusing on other populations (e.g., other age groups, individuals without CHCs). Chronic stress can serve as a risk factor for many different outcomes of interest to health researchers, including mental (e.g., anxiety, depression) and physical (e.g., cardiopulmonary, metabolic) health (Ben-Shlomo & Kuh, 2002; Halfon, Larson, Lu, Tullis, & Russ, 2014). The variants identified through this review could be examined in the future to ascertain their effect in other populations; variants potentially associated with the phenotypes of chronic stress and anxiety will vary at the population level, not specific to any particular condition (McVicar, Ravalier, & Greenwood, 2014; Offidani, Tomba, & Linder, 2013). Two questions guided the initial review: (a) what theoretical frameworks have been used to study chronic stress and anxiety in adolescents and emerging adults and (b) which biomarkers of chronic stress or anxiety have been shown to influence self-management outcomes in AEAs with CHCs?

Methods

An integrative review was conducted to identify and evaluate human research studies that assessed biological markers of chronic stress in AEAs with CHCs making the transition to adulthood. The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement guided the review (Moher, Liberati, Tetzlaff, & Altman, 2009). A research librarian conducted the initial search in PubMed/Medline, PsycInfo, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Articles written in English and published from 2005 to 2015 were identified. This time period was selected because (a) the need to address transitional care began to appear in the literature, and (b) the capacity to measure a diverse array of biological factors expanded dramatically. The initial set of key words identified included those related to AEAs, chronic disease, psychological stress, and biological markers. During the search, related and matching terms were identified and searched for in each specific database. References from published studies and literature reviews were searched manually. Detailed information on the search process and outcomes, including number of articles excluded at each step, is provided in **Figure S1**. Articles retrieved (N = 1,992) included 1,266 from PubMed, 346 from PsycINFO, and 380 from CINAHL. One of the authors (A.L.E.) identified duplicates and conducted a title review to determine relevance, excluding 1,785 articles due to irrelevance (e.g., animal models, procedures). Abstracts

for the remaining 207 were reviewed (by A.L.E.), and 146 were excluded for irrelevance (see **Figure S1**, available with the online version of this article).

The full text of 61 articles was reviewed by authors to determine whether they met inclusion criteria: (a) research studies; (b) human participants 13 to 29 years of age (i.e., AEAs); (c) clear methodologies for measuring chronic stress, anxiety, and biomarkers; (d) outcome measures; and (e) written in English (see **Figure S1**). Studies were excluded if they did not include the age range of interest; did not report on research studies (e.g., review of the literature); or were not in English. While the initial review focused on transition to adulthood and self-management of CHCs, a lack of studies on these topics required broadening the review criteria. Full text review excluded an additional 30 articles. As a last step, the full text of meeting abstracts identified in a follow-up search was reviewed when related articles could not be identified. Of these, five peer-reviewed abstracts were included. These 36 articles and abstracts were used in the integrative review (**Table S1**, available with the online version of this article).

The quality of each individual article was assessed using modified criteria from the Joanna Briggs Institute (Aromataris & Riitano, 2014) deemed essential for evaluating cross-sectional or intervention and group comparison studies (**Table S2**, available with the online version of this article). The checklists assess a study's quality, including the design, methods, analysis, and clinical relevance. These assessments were used as a guide for evaluating quality; scores were not generated during the review process. All 36 studies met the criteria of the checklist and were included in the analysis.

Results

Article metrics were summarized, and detailed information is supplied in **Table S1**. Metrics included authors' disciplines; country(ies) where the study was conducted; diagnoses; sample definition; study models; outcome measures; and biological markers. We also identified authors and journals with multiple publications. Articles on biological and genomic variants associated with chronic stress in individuals with CHCs are reviewed in detail. As descriptions of the study findings involved several common terms used in genomic research, a terminology box is included (**Table S3**, available with the online version of this article).

Study Characteristics

Most studies ($n = 21$) were conducted in the United States. Studies were also conducted in Canada, the United Kingdom, and Germany ($n = 3$ each), and Japan ($n = 2$). Four studies were conducted by nurse scientists (Hammer, 2012; Santacroce & Crandell, 2014) or interdisciplinary teams with a nurse scientist (Gregoski et al., 2012; Tell, Burr, Mathews, & Janusek, 2015). Five articles focused on AEAs with type 1 or type 2 diabetes, four on asthma, and three each on cancer, cancer survivors, and atopic dermatitis. No studies took a noncategorical approach, although some included samples with conditions belonging to a broader diagnostic category.

Sample Definition

Emerging adulthood is typically defined as 18 to 29 years old; however, this overlaps with what is typically considered late adolescence (18–20 years). Thus, studies evaluating adolescents and emerging adults were included in this review. Substantial variation was found in study samples: adolescents only, emerging adults only, adolescents as part of a larger group of children, and emerging adults as part of a larger group of adults. Several studies did not provide sufficient information to fully characterize sample composition, although AEAs were included.

Study Models

Most articles ($n = 27$) did not identify a guiding theoretical model. Only the construct of learned helplessness was used in more than one study (Eddington, 2012; Eddington, Mullins, Byrd-Craven, & Chaney, 2012). Other models included allostatic load (Santacroce & Crandell, 2014), Selye's model of stress and the hypothalamic-pituitary-adrenal (HPA) axis (Heim, Ehlert, Hanker, & Hellhammer, 1998), oxidative stress (Hammer, 2012), diathesis stress (Corbett, Mendoza, Baym, Bunge, & Levine, 2008), frontal electroencephalographic asymmetry-emotion (Schmidt, Miskovic, Boyle, & Saigal, 2010), lifespan (Conte, Walco, & Kimura, 2003), and the circumplex model (Mengel et al., 1992). Models incorporating a biological element were of interest and included Selye's model, oxidative stress, and diathesis stress (Corbett et al., 2008; Hammer, 2012; Heim et al., 1998).

Phenotypes

The phenotypes of interest were chronic anxiety and stress. Definition and measurement of these phenotypes varied substantially. Stress-related concepts included child behavior, stressful life events, anxiety, and depressive symptoms. The most common outcome measures (see **Table S1**) were the Child Behavior Checklist (CBCL; $n = 6$ studies; Conte et al., 2003;

Dykens, Roof, Bittel, & Butler, 2011; Lense, Tomarken, & Dykens, 2013; Mengel et al., 1992; Schmidt et al., 2010; Shashi et al., 2010); State-Trait Anxiety Inventory ($n = 7$ studies; Afsar, Isleten, & Sonmez, 2010; Bloss et al., 2011; Conte et al., 2003; Kiecolt-Glaser et al., 2009; King et al., 2010; Mengel et al., 1992; Schmidt et al., 2010); Center for Epidemiologic Studies Depression Scale ($n = 3$ studies; Eddington, 2012; Eddington et al., 2012; Schmidt et al., 2010); Beck Depression Inventory ($n = 3$ studies; Daskas, Sharples, Woltersdorf, Crowne, & Kids Head Injury NeuroEndocrine Study, 2013; Gross, Schote, Schneider, Schulz, & Meyer, 2014; Raikkonen, Lahti, & Eriksson, 2015), and investigator-derived measures ($n = 11$ measures, $n = 7$ studies; Chen, Fisher, Bacharier, & Strunk, 2003; Delamater et al., 1988; Korczak, Madigan, Daneman, & Manassis, 2010; Lense et al., 2013; Lobo, Granger, Paul, Goebelsmann, & Mishell, 1983; Tell et al., 2015; Weigensberg et al., 2009). Condition-specific measures were included for diabetes, atopic dermatitis, hyperhidrosis, hyperphagia due to Prader-Willi syndrome (PWS), and tics or obsessive-compulsive disorder. Comparison groups also varied; some studies relied on healthy controls (Mizawa, Yamaguchi, Ueda, Makino, & Shimizu, 2013; Rimes, Papadopoulos, Cleare, & Chalder, 2014; Saitoh, Miyakoda, Kitamura, Kotake, & Mashiba, 1992), while others compared within disease groups (Dutour et al., 1996).

As noted in **Table S1**, 13 studies examined responses to an acute stress task or test in a laboratory setting. By far the most common was the Trier Social Stress Test (Buske-Kirschbaum et al., 1997; Eddington, 2012; Eddington et al., 2012; Frederickson, Weltfreid, & Dienes, 2015; Kiecolt-Glaser et al., 2009; Korczak et al., 2010; Tell et al., 2015). Measures of chronic stress varied substantially. Measures assessing life events included the Family Inventory of Life Events and Change, the Life Events Inventory, a life events questionnaire, life events scale, and investigator-derived measures. Three studies used the UCLA Life Stress interview, but the time frame ranged from 3 to 12 months (Chen et al., 2003; Frederickson et al., 2015; Wolf, Nicholls, & Chen, 2008). Another three studies used the Perceived Stress Scale, but also differed in time frame from 1 month to 1 year (Bomberg, Spruijt-Metz, Nguyen-Rodriguez, Goran, & Weigensberg, 2010; Perfect, Elkins, Lyle-Lahroud, & Posey, 2010; Weigensberg et al., 2009).

Biological Measures

Cortisol was the most frequently used biological measure ($n = 27$ studies), but its measurement varied in terms of body fluid, number of samples, and outcome measured. Multiple studies ($n = 10$) measured salivary cortisol but did not specify how. Thirteen studies examined cortisol response to a stressor, while 10 examined the cortisol curve over 1 or more days. Other biological traits included heart rate, blood pressure (BP), DNA, catecholamines, cytokines, body mass index, and other blood-based measures. Additional measures were specific to particular conditions (e.g., HbA1C and insulin tolerance for diabetes, white blood cells for transplant recipients).

Six articles analyzed single nucleotide polymorphisms (SNPs) specific to study outcomes. Five studies used a candidate gene approach (Das Chakraborty et al., 2012; Dykens et al., 2011; Gregoski et al., 2012; Raikkonen et al., 2015; Shashi et al., 2010) and evaluated rs4680 in COMT; rs4570625 in TPH2; rs1360780, rs9470080, and rs9394309 in FKBP5; rs5370 in ET1; and the DiGeorge critical region (DGCR6) and its duplicate (DGCRL) on chromosome 22. One study (Bloss et al., 2011) used a genome-wide approach to identify SNPs of interest in GABRA receptor genes.

Shashi et al. (2010) studied children with 22q11.2 deletion syndrome and nonpsychotic anxiety disorders. rs4680 was analyzed due to prior association with neurocognition. The phenotype included diagnoses of phobia, obsessive-compulsive disorder, separation anxiety, social phobia, generalized anxiety, panic disorder, and post-traumatic stress disorder. Children with 22q11.2 deletion and any anxiety disorder were more likely to have the Val form of the polymorphism. Individuals with the Met allele had higher cognitive function, social skills ratings, and higher CBCL subscale scores.

Dykens et al. (2011) studied the association of rs4570625 with hyperphagia behaviors in PWS due to involvement in the serotonin pathway. Individuals with the minor allele (T) were more likely to exhibit hyperphagia and were younger at onset, and had a higher IQ than those with the dominant allele (G). Females with the T allele also had higher scores on anxiety and depression measures.

Raikkonen and colleagues (2015) assessed the association of three SNPs in FKBP5 (rs1360780, rs9470080, and rs9394309) with early life stress (ELS) and midlife depressive symptoms. FKBP5 was selected due to its involvement in the HPA axis. Those with ELS and more minor alleles in all three SNPs had higher rates of depressive symptoms and increased odds for recurrent high scores for depressive symptoms.

In an intervention study, Gregoski et al. (2012) studied rs5370 in ET1 for its potential association with BP response to a behavioral intervention during stressor exposure. Of interest were the combined effects of genotype and stressor exposure on BP outcomes following intervention. Participants with the minor T allele

responded to one intervention in low-stress environments, but those homozygous for the G allele responded to all interventions in low-stress environments.

A study of individuals with DiGeorge syndrome evaluated the association of critical region expression with parental origin of the mutation of psychopathological diagnosis (Das Chakraborty et al., 2012). SNPs in the deleted region ($n = 450$) and SNPs in linkage disequilibrium with them were analyzed. DGCR6 expression was lower in those with pathological anxiety. Those with maternally inherited deletions also had lower DGCR6L expression. Subjects with low expression had higher rates of pathological anxiety and internalizing behaviors.

Noncandidate Gene Approach

Bloss and colleagues (2011) conducted a genome-wide association study to identify and analyze SNPs in GABRA receptor genes. This study of eating disorder (ED) recovery focused on 5,151 highly conserved SNPs located at splice sites, in exons, in promotor or regulatory regions, at transcription binding factor sites, or at microRNA target sites. rs17536211 (GABRG1) was associated with lower trait anxiety and ED recovery. The top three haplotypes analyzed also include this SNP, although the association of rs17536211 by itself was stronger than any haplotype results.

Discussion

This review evaluated studies of biological measures of chronic stress and anxiety in AEAs with CHCs. A lack of studies providing information on the two questions originally guiding this review led to broadening of the review criteria (e.g., inability to identify studies with a particular focus on self-management strategies). Metrics included study characteristics, theoretical models, phenotypes, measures of chronic stress and anxiety, and biological measures. One particular focus of the review was the study population, given our interest in AEAs. Samples had a wide age range, with AEAs often included in a larger study population, and few focusing only on AEAs (Arnett, 2007). Relying solely on age to define the study sample implies that all AEAs within an age range have similar experiences. Alternative approaches include using developmental, knowledge, and skill-based milestones associated with transition to adulthood. These may provide a more developmentally appropriate approach to transition, compared to age only, with identified needs applying to all AEAs regardless of age. Inclusion criteria should be specific and replicable to facilitate analysis, generalization, and replication.

Studies focused on specific diagnoses, although comorbidities are often shared across diagnosis. Transition-related stress and anxiety are also common to many conditions, as are psychological and physical comorbidities. Future studies should consider a noncategorical approach, explore anxiety and stress across conditions, and identify disease-specific or other individual factors that mediate outcomes.

Theoretical models used varied widely, and not all incorporated biological factors, the predictor of interest in this review. This led to differences in measurement, phenotype definition, and biomarker selection. This limits generalizability, clinical relevance, and translation of study findings. A more strategic approach to model identification, incorporating individual, psychosocial, and contextual factors, would facilitate future work. One possible model for future research is allostatic load, which uses a life course approach to examine the relationship of chronic stress and anxiety to later health, and incorporates biological characteristics (McEwen & Getz, 2013).

Studies varied in the definition and measurement of chronic stress, making comparisons difficult. Careful phenotype identification of chronic stress and linkage with plausible biomarkers is critical to future work. Identifying parsimonious models incorporating all factors of interest will help ensure coherence between studies, as well as the ability to combine results across studies to generate larger sample sizes and more robust findings.

There was also significant variability in biological factors studied. Most studies used cortisol, an acute-phase hormone with significant individual variation. Studies with a genomic component identified variants in disease-related genes. Whether these are relevant to stress and anxiety in a broader population of AEAs with CHCs is unknown. To move the science forward, and identify biological factors and genomic variants broadly associated with chronic stress and anxiety, larger studies with noncategorical samples or comparing disease to no-disease groups are needed. Moving away from the candidate gene approach would also generate a larger panel of variants potentially associated with phenotypes of interest. Prior work has focused on serotonin and the HPA axis, although inflammatory pathways and cytokines are also critically important in the biological response to chronic stress. Alternative biological measures include salivary alpha amylase, hair cortisol, or telomere length.

Although nurses are intimately involved in guiding AEAs through transition, there have been few prospective studies performed by nurses. Knowledge generated from this body of research could lead to targeted use of CHC self-management programs for individuals susceptible to the deleterious effects of stress and anxiety. A greater understanding of the stress-vulnerable phenotype and mechanisms that lead to poor health outcomes may provide new methods for identifying AEAs at greatest

risk and development of targeted approaches specifically designed to address stress and anxiety as a feature of self-management. The findings highlight the critical importance of nursing research in this field and the need for nurse representation on interdisciplinary research teams so that opportunities to advance self-management and the potential for sustained behavioral change are fully realized.

Conclusions

This integrative review identified and evaluated studies of biological measures of chronic stress and anxiety in AEAs with CHCs. This area of research is in its very early stages, with notable limitations for clinical translation. However, current literature provides a critical foundation for future studies. The transition to adulthood is a complex time period; future studies should consider alternative population definitions, as well as a noncategorical approach to CHC diagnoses. This would improve generalization of findings while focusing on the shared experience of transition.

Current approaches to CHC self-management are applied broadly, with little consideration of individual characteristics and preferences. Identifying factors associated with potentially maladaptive responses to the acute stress of transition to adulthood will facilitate individualized approaches to CHC self-management, leading to improved physical and mental health throughout the lifespan. Alternatively, self-management interventions could be tailored to families and individuals, with similar families receiving similar interventions. Further research is needed regarding the effect of tailoring these interventions.

This body of research also focused on highly variable biological data, such as salivary cortisol. Future work identifying genetic factors will help guide individualized application of interventions. Studies across different sites or using existing datasets will play a critical role in generalizability. A deeper understanding of how to address high stress and anxiety during transition may help design interventions to strengthen protective behaviors and capitalize on resiliency. By clarifying the study population, diagnoses examined, and biological factors of interest, targeted approaches to improve self-management can be developed.

Limitations

Although standardized review process steps were followed, additional articles may have been missed. An additional search focusing on co-authors listed on these articles may be informative in identifying additional publications in this area.

Clinical Resources

- The Blueprint for Genomic Nursing Science: https://www.genome.gov/27527634/competency-and-curricular-resources/.
- Genetics & Genomics Competency Center: http://g-2-c-2.org/competency
- International Society for Nurses in Genetics: http://isong.org
- Jackson Laboratories: https://www.jax.org/education-and-learning/clinical-and-continuing-education
- The National Human Genome Research Institute (NHGRI): https://www.genome.gov/27527632/: https://www.genome.gov/education/.

References

Afsar, F. S., Isleten, F., & Sonmez, N. (2010). Children with atopic dermatitis do not have more anxiety or different cortisol levels compared with normal children. *Journal of Cutaneous Medicine and Surgery*, *14*(1), 13–18.

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, *1*(2), 68–73.

Aromataris, E., & Riitano, D. (2014). Systematic reviews: Constructing a search strategy and searching for evidence. *American Journal of Nursing*, *114*(5), 49–56.

Beckie, T. M. (2012). A systematic review of allostatic load, health, and health disparities. *Biological Research for Nursing*, *14*(4), 311–346.

Ben-Shlomo, Y., & Kuh, D. (2002). A life course approach to chronic disease epidemiology: Conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology*, *31*(2), 285–293.

Bloss, C. S., Berrettini, W., Bergen, A. W., Magistretti, P., Duvvuri, V., Strober, M., ... Kaye, W. H. (2011). Genetic association of recovery from eating disorders: The role of GABA receptor SNPs. *Neuropsychopharmacology*, *36*(11), 2222–2232. doi:10.1038/npp.2011.108

Bomberg, E., Spruijt-Metz, D., Nguyen-Rodriguez, S., Goran, M. I., & Weigensberg, M. J. (2010). Higher psychosocial stress is associated with increased cortisol awakening response (CAR) and lower insulin sensitivity (SI) in obese Latino adolescents. *Diabetes*, *59*(Suppl.), A5.

Bosk, A. (2011). Anxiety in medically ill children/adolescents. *Depression and Anxiety*, *28*(1), 40–49.

Buske-Kirschbaum, A., Jobst, S., Wustmans, A., Kirschbaum, C., Rauh, W., & Hellhammer, D. (1997). Attenuated free

cortisol response to psychosocial stress in children with atopic dermatitis. *Psychosomatic Medicine*, *59*, 419–426.

Chen, E., Fisher, E. B., Bacharier, L. B., & Strunk, R. C. (2003). Socioeconomic status, stress, and immune markers in adolescents with asthma. *Psychosomatic Medicine*, *65*(6), 984–992. doi:10.1097/01.psy.0000097340.54195.3c

Conte, P. M., Walco, G. A., & Kimura, Y. (2003). Temperament and stress response in children with juvenile primary fibromyalgia syndrome. *Arthritis & Rheumatism*, *48*(10), 2923–2930. doi:10.1002/art.11244

Corbett, B. A., Mendoza, S. P., Baym, C. L., Bunge, S. A., & Levine, S. (2008). Examining cortisol rhythmicity and responsivity to stress in children with Tourette syndrome. *Psychoneuroendocrinology*, *33*(6), 810–820. doi:10.1016/j.psyneuen.2008.03.014

Das Chakraborty, R., Bernal, A. J., Schoch, K., Howard, T. D., Ip, E. H., Hooper, S. R., … Shashi, V. (2012). Dysregulation of DGCR6 and DGCR6L: Psychopathological outcomes in chromosome 22q11.2 deletion syndrome. *Translational Psychiatry*, *2*, e105. doi:10.1038/tp.2012.31

Daskas, N., Sharples, P., Woltersdorf, W., Crowne, E., & Kids Head Injury NeuroEndocrine Study. (2013). Pulsatility of the hypothalamus-pituitary adrenal (HPA) axis in depressed male survivors of childhood traumatic brain injury (TBI). *Hormone Research*, *80* (Suppl. 1), 166.

Delamater, A. M., Bubb, J., Kurtz, S. M., Kuntz, J., Smith, J. A., White, N. H., & Santiago, J. V. (1988). Physiologic responses to acute psychological stress in adolescents with type 1 diabetes mellitus. *Journal of Pediatric Psychology*, *13*(1), 69–86.

Dutour, A., Boiteau, V., Dadoun, F., Feissel, A., Atlan, C., & Oliver, C. (1996). Hormonal response to stress in brittle diabetes. *Psychoneuroendocrinology*, *21*(6), 525–543.

Dykens, E. M., Roof, E., Bittel, D., & Butler, M. G. (2011). TPH2 G/T polymorphism is associated with hyperphagia, IQ, and internalizing problems in Prader-Willi syndrome. *Journal of Child Psychology and Psychiatry*, *52*(5), 580–587. doi:10.1111/j.1469-7610.2011.02365.x

Eddington, A. R. (2012). *Stress reactivity in college students with asthma: A replication and extension* (Doctoral dissertation). Oklahoma State University, Stillwater, OK.

Eddington, A. R., Mullins, L. L., Byrd-Craven, J., & Chaney, J. M. (2012). An experimental examination of stress reactivity in adolescents and young adults with asthma. *Children's Health Care*, *41*(1), 16–31. doi:10.1080/02739615.2012.643287

Evans, G. W. (2003). A multimethodological analysis of cumulative risk and allostatic load among rural children. *Developmental Psychology*, *39*(5), 924–933. doi:10.1037/0012-1649.39.5.924

Ferro, M. A., Gorter, J. W., & Boyle, M. H. (2015). Trajectories of depressive symptoms during the transition to young adulthood: The role of chronic illness. *Journal of Affective Disorders*, *174*, 594–601.

Frederickson, S. R., Weltfreid, O., & Dienes, K. (2015, March). The impact of chronic stress on cortisol activity. Abstract presented at the 73rd Annual American Psychosomatic Society Meeting, Savannah, GA. doi:10.1097/PSY.0000000000000198

Gregoski, M. J., Barnes, V. A., Tingen, M. S., Dong, Y., Zhu, H., & Treiber, F. A. (2012). Differential impact of stress reduction programs upon ambulatory blood pressure among African American adolescents: Influences of endothelin-1 gene and chronic stress exposure. *International Journal of Hypertension*, *2012*, 510291. doi:10.1155/2012/510291

Gross, K. M., Schote, A. B., Schneider, K. K., Schulz, A., & Meyer, J. (2014). Elevated social stress levels and depressive symptoms in primary hyperhidrosis. *PLoS One*, *9*(3), e92412. doi:10.1371/journal.pone.0092412

Halfon, N., Larson, K., Lu, M., Tullis, E., & Russ, S. (2014). Lifecourse health development: Past, present and future. *Maternal and Child Health Journal*, *18*(2), 344–365.

Hammer, M. (2012, April). *Glycemic status and biomarkers in cancer*. Paper presented at the Annual Meeting of the Western Institute of Nursing, Portland, OR.

Heim, C., Ehlert, U., Hanker, J. R., & Hellhammer, D. H. (1998). Abuse-related posttraumatic stress disorder and alterations of the hypothalamic-pituitary-adrenal axis in women with chronic pelvic pain. *Psychosomatic Medicine*, *60*, 309–318.

Juster, R.-P., Bizik, G., Picard, M., Arsenault-Lapierre, G., Sindi, S., Trepanier, L., … Lupien, S.J. (2011). A transdisciplinary perspective of chronic stress in relation to psychopathology throughout life span development. *Development and Psychopathology*, *23*(3), 725–776. doi:10.1017/S0954579411000289

Juster, R.-P., McEwen, B. S., & Lupien, S. J. (2010). Allostatic load biomarkers of chronic stress and impact on health and cognition. *Neuroscience & Biobehavioral Reviews*, *35*(1), 2–16.

Kiecolt-Glaser, J. K., Heffner, K. L., Glaser, R., Malarkey, W. B., Porter, K., Atkinson, C., Marshall, G.D. (2009). How stress and anxiety can alter immediate and late phase skin test responses in allergic rhinitis. *Psychoneuroendocrinology*, *34*(5), 670–680. doi:10.1016/j.psyneuen.2008.11.010

King, N. M., Chambers, J., O'Donnell, K., Jayaweera, S. R., Williamson, C., & Glover, V. A. (2010). Anxiety, depression and saliva cortisol in women with a medical disorder during pregnancy. *Archives of Womens Mental Health*, *13*(4), 339–345. doi:10.1007/s00737-009-0139-5

Korczak, D. J., Madigan, S., Daneman, D., & Manassis, K. (2010). Association of cortisol stress response with depression and anxiety symptoms in adolescents with diabetes. *Biological Psychiatry*, *67*(9), 43S. doi:10.1016/j.biopsych.2010.03.007

Lense, M. D., Tomarken, A. J., & Dykens, E. M. (2013). Diurnal cortisol profile in Williams syndrome in novel and familiar settings. *American Journal on Intellectual and*

Developmental Disabilities, *118*(3), 201–210. doi:10.1352/1944-7558-118.3.201

Lobo, R. A., Granger, L. R., Paul, W. L., Goebelsmann, U., & Mishell, D. R. (1983). Psychological stress and increases in urinary norepinephrine metabolites, plasma serotonin, and adrenal androgens in women with polycystic ovary syndrome. *American Journal of Obstetrics and Gynecology*, *145*, 496–503.

Lorig, K. R., Ritter, P., Stewart, A. L., Sobel, D. S., Brown Jr, B. W., Bandura, A., ... Holman, H. R. (2001). Chronic disease self-management program: 2-year health status and health care utilization outcomes. *Medical Care*, *39*(11), 1217–1223.

McEwen, B. S., & Getz, L. (2013). Lifetime experiences, the brain and personalized medicine: An integrative perspective. *Metabolism*, *62*, S20–S26.

McVicar, A., Ravalier, J. M., & Greenwood, C. (2014). Biology of stress revisited: Intracellular mechanisms and the conceptualization of stress. *Stress and Health*, *30*(4), 272–279.

Mengel, M. B., Blackett, P. R., Lawler, M. K., Volk, R. J., Viviani, N. J., Stamps, G. S., ... Lovallo, W. R. (1992). Cardiovascular and neuroendocrine responsiveness in diabetic adolescents within a family context: Association with poor diabetic control and dysfunctional family dynamics. *Family Systems Medicine*, *10*(1), 5–33.

Mizawa, M., Yamaguchi, M., Ueda, C., Makino, T., & Shimizu, T. (2013). Stress evaluation in adult patients with atopic dermatitis using salivary cortisol. *BioMed Research International*, *2013*, 138027. doi:10.1155/2013/138027

Modi, A. C., Pai, A. L., Hommel, K. A., Hood, K. K., Cortina, S., Hilliard, M. E., ... Drotar, D. (2012). Pediatric self-management: A framework for research, practice, and policy. *Pediatrics*, *129*(2), e473–e485.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*, *151*(4), 264–269.

Newbould, J., Taylor, D., & Bury, M. (2006). Lay-led self-management in chronic illness: A review of the evidence. *Chronic Illness*, *2*(4), 249–261.

Offidani, E., & Ruini, C. (2012). Psychobiological correlates of allostatic overload in a healthy population. *Brain, Behavior, and Immunity*, *26*(2), 284–291.

Offidani, E., Tomba, E., & Linder, M. (2013). Two key concepts in the life course approach in medicine: Allostatic load and cumulative life course impairment. In M. D. Linder & A. B. Kimball (Eds), *Dermatological diseases and cumulative life course impairment* (Vol. *44*, pp. 17–32). Basel, Switzerland: Karger Publishers.

Perfect, M. M., Elkins, G. R., Lyle-Lahroud, T., & Posey, J. R. (2010). Stress and quality of sleep among individuals diagnosed with diabetes. *Stress and Health*, *26*(1), 61–74. doi:10.1002/smi.1262

Raikkonen, K., Lahti, J., & Eriksson, J. G. (2015, March). Early life stress, FKBP5 and depressive symptoms in midlife. Abstract presented at the 73rd Annual American Psychosomatic Society Meeting, Savannah, GA. doi:10.1097/PSY.0000000000000198

Rimes, K. A., Papadopoulos, A. S., Cleare, A. J., & Chalder, T. (2014). Cortisol output in adolescents with chronic fatigue syndrome: Pilot study on the comparison with healthy adolescents and change after cognitive behavioural guided self-help treatment. *Journal of Psychosomatic Research*, *77*(5), 409–414. doi:10.1016/j.jpsychores.2014.08.018

Ritter, P. L., Lee, J., & Lorig, K. (2011). Moderators of chronic disease self-management programs: Who benefits? *Chronic Illness*, *7*(2), 162–172. doi:10.1177/1742395311399127

Saitoh, M., Miyakoda, H., Kitamura, H., Kotake, H., & Mashiba, H. (1992). Cardiovascular and sympathetic nervous responses to mental stress in hyperthyroid patients. *Internal Medicine*, *31*, 1175–1778.

Sansom-Daly, U. M., Peate, M., Wakefield, C. E., Bryant, R. A., & Cohn, R. J. (2012). A systematic review of psychological interventions for adolescents and young adults living with chronic illness. *Health Psychology*, *31*(3), 380–393.

Santacroce, S. J., & Crandell, J. B. (2014). Feasibility and preliminary findings from a pilot study of allostatic load in adolescent-young adult childhood cancer survivors and their siblings. *Journal of Pediatric Oncology Nursing*, *31*(3), 122–134. doi:10.1177/1043454213520190

Schmidt, L. A., Miskovic, V., Boyle, M., & Saigal, S. (2010). Frontal electroencephalogram asymmetry, salivary cortisol, and internalizing behavior problems in young adults who were born at extremely low birth weight. *Child Development*, *81*(1), 183–199.

Shashi, V., Howard, T. D., Keshavan, M. S., Kaczorowski, J., Berry, M. N., Schoch, K., ... Kwapil, T. R. (2010). COMT and anxiety and cognition in children with chromosome 22q11.2 deletion syndrome. *Psychiatry Research*, *178*(2), 433–436. doi:10.1016/j.psychres.2010.04.048

Tell, D., Burr, R. L., Mathews, H. L., & Janusek, L. W. (2015, March). Chronic stress and childhood adversity modulate vagal and stress-immune response to the Trier Social Stress Test in women with breast cancer. Abstract presented at the 73rd Annual American Psychosomatic Society Meeting, Savannah, GA. doi:10.1097/PSY.0000000000000198

Turkel, S. (2007). Late consequences of chronic pediatric illness. *Psychiatric Clinics of North America*, *30*(4), 819–835.

Turner-Cobb, J. (2013). *Child health psychology: A biopsychosocial perspective* (1st ed.). London, UK: Sage Publications Ltd.

Weigensberg, M. J., Lane, C. J., Winners, O., Wright, T., Nguyen-Rodriguez, S., Goran, M. I., & Spruijt-Metz, D.

(2009). Acute effects of stress-reduction Interactive Guided Imagery(SM) on salivary cortisol in overweight Latino adolescents. *Journal of Alternative and Complementary Medicine*, *15*(3), 297–303. doi:10.1089/acm.2008.0156

Wolf, J. M., Nicholls, E., & Chen, E. (2008). Chronic stress, salivary cortisol, and alpha-amylase in children with asthma and healthy children. *Biological Psychology*, *78*(1), 20–28. doi:10.1016/j.biopsycho.2007.12.004

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Figure S1. Literature review process.
Table S1. Articles Included in Integrative Review
Table S2. Quality Assessment Criteria

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

CE

Lessons Learned From a Practice-Based, Multisite Intervention Study With Nurse Participants

Christopher R. Friese, PhD, RN, AOCN®, FAAN[1], Kari Mendelsohn-Victor, MPH[2], Pamela Ginex, EdD, RN, OCN[3], Carol M. McMahon, BSN, RN[4], Alex J. Fauer[5], & Marjorie C. McCullagh, PhD, RN, FAAOHN, FAAN[6]

1 *Rho,* Professor, Department of Systems, Populations, and Leadership, University of Michigan School of Nursing, Ann Arbor, MI, USA
2 Clinical Research Coordinator, Department of Systems, Populations, and Leadership, University of Michigan School of Nursing, Ann Arbor, MI, USA
3 Nurse Scientist, Department of Nursing, Memorial Sloan-Kettering Cancer Center, New York, NY, USA
4 Nurse Supervisor, University of Michigan Comprehensive Cancer Center, Ann Arbor, MI, USA
5 *Rho,* Undergraduate Student, University of Michigan School of Nursing and the Hillman Foundation Scholars in Nursing Innovation Program, Ann Arbor, MI, USA
6 *Rho,* Professor, Department of Systems, Populations, and Leadership, University of Michigan School of Nursing, Ann Arbor, MI, USA

Key words
Education, environmental health, intervention research, survey methodology, work environment

Correspondence
Christopher R. Friese, Department of Systems, Populations, and Leadership, University of Michigan School of Nursing, 400 North Ingalls, Suite 4162, Ann Arbor, MI 48109-5482 USA.
E-mail: cfriese@umich.edu

Accepted December 13, 2016

doi: 10.1111/jnu.12279

Abstract

Purpose: To identify challenges and solutions to the efficient conduct of a multisite, practice-based randomized controlled trial to improve nurses' adherence to personal protective equipment use in ambulatory oncology settings.
Design: The Drug Exposure Feedback and Education for Nurses' Safety (DEFENS) study is a clustered, randomized, controlled trial. Participating sites are randomized to Web-based feedback on hazardous drug exposures in the sites plus tailored messages to address barriers versus a control intervention of a Web-based continuing education video.
Approach: The study principal investigator, the study coordinator, and two site leaders identified challenges to study implementation and potential solutions, plus potential methods to prevent logistical challenges in future studies.
Findings: Noteworthy challenges included variation in human subjects' protection policies, grants and contracts budgeting, infrastructure for nursing-led research, and information technology variation. Successful strategies included scheduled Web conferences, site-based study champions, site visits by the principal investigator, and centrally based document preparation. Strategies to improve efficiency in future studies include early and continued engagement with contract personnel in sites, and proposed changes to the common rule concerning human subjects. The DEFENS study successfully recruited 393 nurses across 12 sites. To date, 369 have completed surveys and 174 nurses have viewed educational materials.
Conclusions: Multisite studies of nursing personnel are rare and challenging to the existing infrastructure. These barriers can be overcome with strong engagement and planning.
Clinical Relevance: Leadership engagement, onsite staff support, and continuous communication can facilitate successful recruitment to a workplace-based randomized, controlled behavioral trial.

Multisite research is an important strategy to strengthen the external validity of nursing science (O'Mara, Bauer-Wu, Berry, & Lillington, 2007). In contrast to single-site studies, research projects conducted with multiple sites offer potentially larger, more diverse participant samples and reduce the likelihood of idiosyncratic research findings. Conversely, multisite studies are more complicated to conduct and administer. New complexities also arise when research participants are staff, as opposed to patients or clients.

Workplace intervention studies are increasing, due in part to growing awareness that improved worker health and safety have downstream societal benefits (Anger et al., 2015). Specifically, the National Institute for

Occupational Safety and Health (NIOSH) has launched the Total Worker Health initiative to respond to this challenge (NIOSH, 2016; Weisfeld, Lustig, & Board of Health Sciences Policy, 2014). Healthy workers are associated with lower turnover, improved economic productivity, and enhanced personal well-being. Due to labor shortages, high acuity, long shifts, and physical demands, NIOSH has identified healthcare workers as a vulnerable labor sector for intervention (NIOSH, 2013). For the past 10 years, our interdisciplinary team has documented the specific concerns of oncology nurses employed in ambulatory oncology settings. These nurses face an unusual occupational threat of hazardous drug exposure given the high patient volume, the explicit emphasis on chemotherapy treatment, and associated continuous risks of exposure.

Our team documented that 18% of surveyed ambulatory oncology nurses experienced an unplanned hazardous drug spill in the preceding 6 months (Friese et al., 2014). Hazardous drug exposure is correlated with substantial short- and long-term health effects, such as nausea, vomiting, airway irritation, reproductive problems, and rare cancers (NIOSH, 2004). Despite 30 years of data to support the need for increased vigilance when handling hazardous drugs, surprisingly few nurses wear personal protective equipment as recommended (Connor & McDiarmid, 2006; Polovich & Clark, 2012). Except for the current project, only one published study examined an educational intervention for nurses, conducted in one Malaysian hospital (Keat, Sooaid, Yun, & Sriraman, 2013). Thus, we lack sufficient evidence on how to improve nurses' use of personal protective equipment when handling hazardous drugs.

The Drug Exposure Feedback and Education for Nurses' Safety (DEFENS) study is a 4-year, multisite cluster randomized controlled trial (Friese, Mendelsohn-Victor, et al., 2015). The study compares one-time static educational information about hazardous drug exposure prevention to quarterly feedback on study results, coupled with tailored messages designed to reduce barriers to protective equipment use. In planning for the project, we reviewed the sparse literature that describes multisite research project management with registered nurse employees as participants. In the current article, we review successful study implementation strategies and identify important considerations for future research projects that plan to incorporate nurses as participants.

Approach

The DEFENS study is a cluster randomized controlled trial. Nurses who work 16 hr a week or more in ambulatory infusion within 12 large cancer centers in the United States were invited to participate. Full details may be found in the published protocol paper (Friese, Mendelsohn-Victor, et al., 2015) or in the ClinicalTrials.gov registry (National Institutes of Health [NIH], 2016a). Guided by extant models of health behavior and risk reduction, we hypothesized that one-time educational content is insufficient to improve nurses' use of personal protective equipment when handling hazardous drugs (McCullagh, Ronis, & Lusk, 2010). Rather, we compared static educational content (control intervention) to quarterly feedback about data gleaned from our study, coupled with video messages tailored to participants' reported barriers to protective equipment use (experimental intervention). To avoid within-clinic contamination, randomization occurred at the site level, stratified for clinic size and baseline use of personal protective equipment. The primary endpoint is nurse-reported use of personal protective equipment following 1 year of education or feedback plus tailored messages, using a validated self-report instrument (Polovich & Martin, 2011). To assess intervention fidelity, our team monitored participants' frequency of accessing Web-based materials and the duration of time they viewed website content.

Nurses also provided prospective reports of hazardous drug spills for quarterly analyses (delivered to the sites assigned to experimental intervention). Secondary analyses included measuring hazardous drug exposures in nurses' plasma, as well as correlative analyses of immune and reproductive function. Informed consent, study questionnaires, educational content, and feedback content were housed on an encrypted, user-authenticated website.

For the present inquiry, study team members identified key challenges to study operations and strategies to assure study success. Team members also identified persistent and emerging issues for future investigators and participating site personnel to consider when embarking on a multisite research study involving nursing personnel. To evaluate our study procedures, we constructed a flow diagram for participant and recruitment, as recommended by the Consolidated Standards of Reporting Trials (CONSORT; Campbell, Piaggio, Elbourne, Altman, & CONSORT Group, 2012).

Findings

Leadership Engagement

Congruent with the implementation science literature (Yevchak et al., 2014), as well as organizational change theory (Tropman & Wooten, 2010), our team identified that endorsement and ongoing support by the senior nursing executive was crucial for success. Senior nursing

leadership engagement facilitated timely protocol activation and encouraged clinical nurses to participate. Engagement began before the proposal was submitted and continued at periodic intervals throughout the project.

Before the original grant proposal was submitted, the principal investigator (PI) contacted senior nurse executives from National Cancer Institute–designated comprehensive cancer centers. He presented an overview of the proposed project at their annual meeting. He led 1-hr informational webinars that reviewed the study team's preliminary data and outlined the proposed research project. He prepared 5-page executive summaries for these leaders to share with their institution's senior leadership. On several occasions, feedback from these executives led to important study protocol changes. For example, one leader recommended reviewing the policies of all participating institutions for differences in hazardous drug handling policy. Another identified strategies for nurses in satellite locations to participate.

After a favorable peer-review process by NIOSH's study section, the PI re-engaged with interested leaders to plan for study activation. Re-engagement enabled leaders to identify key contacts, budgetary considerations, and information technology needs for participation. After re-engagement, several supportive leaders declined participation, principally due to major organizational changes in cancer care services or electronic health record implementation. The PI was able to replace these sites by contacting chief nursing officers from other cancer centers.

To demonstrate leadership support of the project to potential participants, we drafted study letter endorsements that would be sent to eligible staff nurses on behalf of the nurse leaders. The study team and the nursing leaders agreed that study participants would remain anonymous to the nurse leaders in the institution to promote trust in the study and ensure confidentiality of responses as well as of personal health information from employers.

Human Subjects Protections

Institutional review boards (IRBs) have extensive experience in protecting human subjects who are patients in a healthcare facility. They have less experience when employees are participants and the interventions are not of a clinical nature. Timely, thorough, and efficient human subjects review was a critical priority for the study team. In partnership with leaders of our institution's IRB, we carefully reviewed the criteria for "not-engaged" status for participating sites. An institution can be considered "not engaged" if the involvement of their employees or their agents is limited, among other things, to the following criteria: (a) the services performed do not merit professional recognition or publication privileges, (b) the services performed are typically performed by those institutions for nonresearch purposes, and (c) the institution's employees or agents do not administer any study intervention being tested or evaluated under the protocol (U.S. Department of Health and Human Services Office of Human Research Protections, 2016).

The advantage of not-engaged status meant that our protocol would be reviewed, critiqued, and approved centrally, that informed consent documents would be standardized, and that administrative workloads would be reduced for participating sites. Another option to retain centralized control was to have site IRB cede control to the university by completing an IRB Authorization Agreement (IAA) form (National Academies of Science, Engineering, and Medicine, 2016).

Our initial approach was to review our IRB's determination of not-engaged status with each site, provide requisite documentation, and ask them to confer with their IRB. We offered to speak with IRB staff and highlight that participants were employees, not patients, the intervention was behavioral in nature, and a data safety monitoring board was in place at the primary institution in the event of an adverse event. In six cases, the participating sites' IRBs agreed with our interpretation. In three cases, participant sites' IRBs ceded authority to our institution's IRB. In three cases, the participating institution required full review by their IRB. In the three latter cases, the study team provided as much assistance in preparing documents for review as possible. The time between initial IRB approval and final IRB approval at the last research site was 11 months.

The shift to not-engaged status required the team to modify several study procedures from our original plan. The coordinators at each site were no longer responsible for direct participant recruitment. Their role shifted to study facilitation, as they provided information, resources, and assisted participants with website navigation. Informed consent took place on the study website. Questions regarding consent and the study protocol were directed to the study personnel at the primary site. The downside of this approach is study coordinators did not know which nurses were enrolled in the study and could not provide personal reminders to complete study activities. A full-time project manager at the primary site was essential to manage participant inquiries.

Benefits of On-Site Study Coordinators

We asked each site to name at least one registered nurse to serve as a study coordinator. In most cases, the grant provided financial resources to the institution to

partially subsidize the hours coordinators spent. These individuals provided information about the study to participants and clinic leaders, coordinated logistics of site visits, identified where and how blood would be drawn at each site, and directed participants to complete surveys and have blood drawn, when applicable.

To support these study coordinators, the project manager prepared a binder with all study materials, including the full protocol, a clean copy of the consent form, and a document of frequently asked questions. These materials were updated as necessary, based on feedback from the study coordinators. The primary site also held four recorded webinars to review study procedures, answer questions, and address concerns. The primary site has held webinars approximately quarterly to keep study coordinators informed on study progress, address any ongoing challenges, and maintain enthusiasm for the project. We took steps to reduce the potential for cross-site contamination. After sites were randomized to intervention or control arms, separate telephone calls were held with study coordinators based on their randomization status. We also stressed to participants and study coordinators that all participants will learn the results of the study before the project concludes.

Finally, the PI or project manager conducted visits to all 12 sites at the time of study activation; another site visit occurs close to the primary endpoint collection time point. This visit enabled the PI and project manager to educate staff and engage nurses at each site in the study. It was also an opportunity to connect with study coordinators, thank them for their support, and outline logistics of study accrual and intervention procedures. Study coordinators were instrumental in arranging these visits and encouraging staff to attend information sessions with the study personnel.

Study coordinators assisted the project by troubleshooting reasons for low participation rates in educational video viewing. Study coordinators identified technology challenges and time constraints as barriers to timely completion. Coordinators also challenged our assumption that staff members would complete study activities after hours at home. They suggested communal "viewing parties" during scheduled work breaks with refreshments to facilitate completion. We also modified delivery of the materials to facilitate easy viewing based on their feedback. These suggestions were associated with improving our participation rate from 17.4% to 60.8% at the time of this publication.

Internet Access and Browser Compatibility

Advantages of Web-based study platforms include the capacity to standardize delivery, monitor access, and adjust content as needed. Our team experienced substantial challenges with the variation in informational technology and security restrictions across 12 participating sites. Despite substantial user testing before the project website launched, several institutions continued to use outdated and unsupported Web browsers during the study period. This required unplanned modifications to the website design and scaled-down versions of materials for participants in affected sites. In addition to website browser incompatibility, several sites restricted the kinds of files staff members could access on clinic computers. Although we provided each site's informational technology departments with Web addresses in advance, several sites blocked viewing of video materials, regardless of source. For participants unable to access the videos, our team created 1-page handouts that summarized the video content. To reduce the burden of using the Website, we used Qualtrics™ (Provo, UT, USA) software to deliver videos and handouts directly to participants' email accounts.

Site Budgeting Challenges

Financial management of federally supported multisite projects intersect federal policy and primary site institutional policy, in addition to the policies of participating sites. These policies are not always congruent. Moreover, grants and contract personnel occasionally do not understand the scope of work planned for the sites. In addition, policy changes that occur during the awards process require planning, attention, and flexibility by the primary research team.

In the case of the DEFENS study, the Department of Health and Human Services modified their policy in 2014, between the time of our original proposal and budget submission (Office of Management and Budget, 2014). The PI requested budgets from each site in the pre-award phase, with the expectation of no indirect costs included. However, after the policy change, participating institutions now expected full indirect costs in addition to their originally submitted budget. Yet the funds provided by the Centers for Disease Control and Prevention did not provide funds to support the work, plus full indirect costs at the participating sites.

The PI, in partnership with senior nurse executives at each site, engaged in discussions with respective grants and contracts departments to request waivers for full indirect costs for the project. These waiver requests highlighted the unique study focus on employees, not patients, the not-engaged human subjects determination for most sites, and the institutional benefits to participation. Whenever possible, the PI pledged nonfinancial resources to support sites with study activities, including

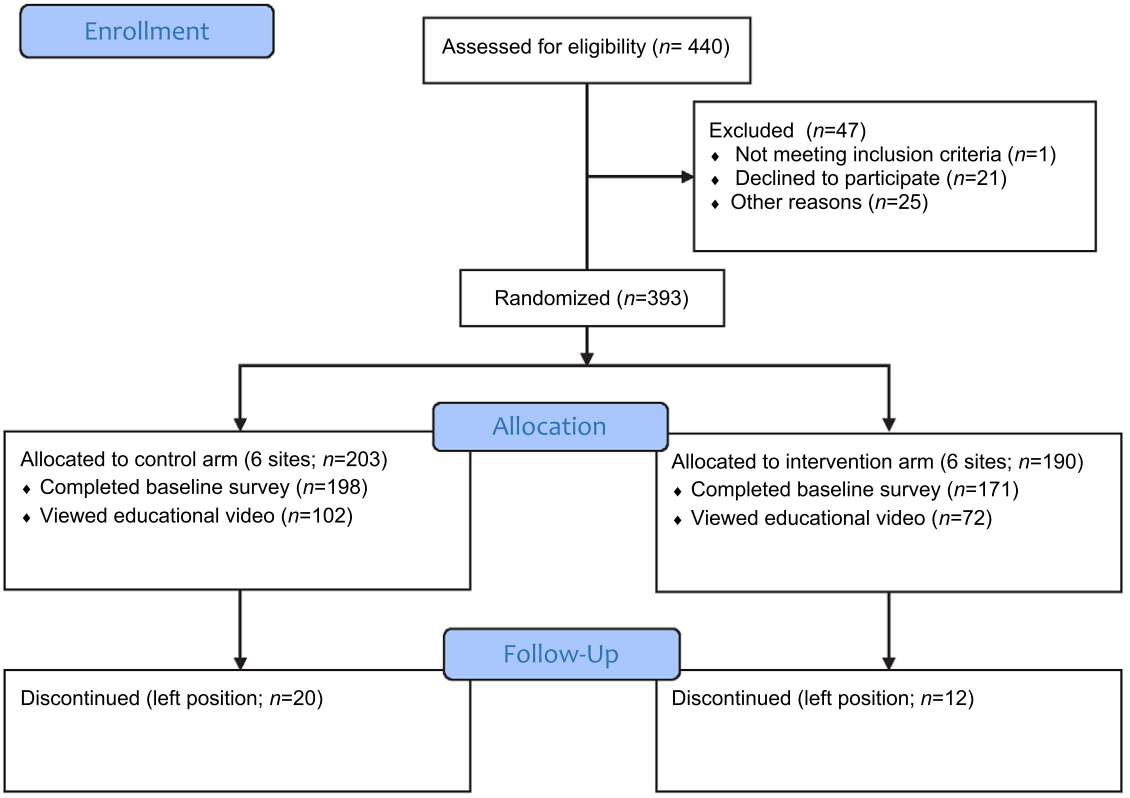

Figure 1. Participant flow diagram.

primary site preparation of any requisite documents and on-site assistance with participant enrollment. In addition, the project manager assumed primary responsibility for several functions we anticipated study coordinators to assume. Fortunately, we prevailed in all 12 site negotiations. In the future, however, closer consultation with grants and contracts offices in the pre-award phase should help clarify roles and expectations.

Enrollment and Participation Rates

Figure 1 shows the CONSORT diagram of study participants. The number of participants is slightly uneven in arms because sites, not participants, were randomized. Of 440 registered nurses identified by sites that met eligibility criteria, 393 completed the informed consent process and 369 (93.9%) of those completed baseline surveys. To date, 174 (47.2%) of the participants who completed baseline surveys have also viewed the control education video. To date, 32 participants have withdrawn from the study because of a change in employment or employment duties.

Discussion

Increasingly, nursing scientists turn to multisite research designs to recruit larger samples of participants efficiently, as well as to boost statistical power to detect meaningful effect sizes, strengthen external validity, and promote implementation of efficacious interventions (Donovan, Nolte, Edwards, & Wenzel, 2014). Emerging interest in promoting a culture of health has shifted the lens of health promotion and risk reduction research to population-level interventions embedded in workplaces (Lavizzo-Mourey, 2015). These converging interests pose challenges and opportunities for nursing scientists. In our team's 2-year experience conducting a multisite randomized controlled trial with registered nurse participants, we identified five important considerations for PIs and study team members who plan to conduct similar studies.

Our project benefited from strong support from senior nursing leaders during study planning and execution. This approach was used successfully in a prior project that involved chief nursing officer participation in the research project, but required the trust and candor of

registered nurse participants (Friese, Siefert, Thomas-Frost, Walker, & Ponte, 2015). While leaders should pledge and demonstrate support for research projects, they must also take care to avoid direct involvement in the project when employees are participants. In our case, the leaders understood that direct knowledge of which employees were participating could threaten the candor of responses.

We were fortunate to have thoughtful input from the IRB to pursue strategies for rigorous and efficient human subjects review. Not all projects will qualify for not-engaged designation. Recent policy changes regarding single IRB review of studies funded by the NIH may benefit researchers conducting multisite research (NIH, 2016b). Careful delineation of responsibilities, including clear roles and responsibilities of study site key contacts and primary site study team members, will be essential for smooth implementation as regulations and IRB policies change (O'Rourke et al., 2015).

While our change to our human subjects protections plan offered efficiency, we also had to adjust the planned roles of on-site study coordinators. They became less involved in participant recruitment and instead served as study facilitators. Yet we found their feedback about their organization and the experiences of their colleagues as study participants crucial for study success. They provided essential recommendations to amend study procedures and try alternate approaches, particularly when considering viewing educational materials. Implementation scientists have cited absence of local support as a key contributor to failed implementation (Scott et al., 2009). Our experience would support this observation. Another argument for on-site study staff is to meet the New Knowledge component for the American Nurses Credentialing Center Magnet Recognition Program (American Nurses Credentialing Center, 2013). One portion of the evaluation criteria assesses whether clinical nurses participate in nursing research within the organization. Our project-assisted study sites pursuing Magnet recognition show evidence of ongoing nursing research.

To date, few investigators have documented Internet access and browser compatibility issues across research sites. The study team's experiences with these challenges are novel, and pose important implications for future researchers. Internet-based educational interventions are ubiquitous given the high rates of access and increased use of smartphones. Despite technological advances, healthcare facilities lag behind other employment sectors due to privacy and cost concerns (HIMSS Analytics, 2015). Information technology resources and policies vary substantially across healthcare settings, which makes intervention website design more complicated. Despite an upfront capabilities survey, careful planning, and pilot testing, several of our sites had difficulties with the website as initially designed. We encourage investigators to plan for additional programming costs after initial design for such a contingency. Our measurement of intervention fidelity is limited to data capture from the website; additional procedures to include direct observation of participants would strengthen the validity of our findings.

Several aspects of the current inquiry merit comment. First, the DEFENS study sites are primarily elite cancer cancers with robust research capacity. PIs conducting research in sites with less research capacity and experience may encounter different challenges. Multisite projects consume substantial fiscal and human resource costs. Close collaboration with grants management professionals, coupled with frequent engagement with research sites, will minimize the impact of subsequent surprises. In our experience, senior leadership engagement coupled with pledging nonfinancial resources were key to overcoming obstacles. Yet we realize there are underappreciated costs to sites for research participation. Assuring that the project aligns with the organizational mission is an important consideration in recruiting sites.

While our investigation focused on a project that included employee participants, many of the findings are generalizable to sites where patients are participants. It is unclear how current revisions to NIH policy will impact future human subjects' protection plans in projects not funded by the NIH. Yet our findings, which include perspectives of the primary research team and leaders at participating sites, have notable relevance to the nursing scientists as they plan and conduct complex multisite intervention studies.

Conclusions

As the third year of the study began, the DEFENS study team has successfully recruited 393 participants from 12 cancer centers across the country to understand factors that predict nurses' use of personal protective equipment when handling hazardous drugs. Our team identified senior leadership engagement, on-site study coordinator participation, and partnership with IRB staff as key factors in the project's success. PIs planning future Web-based, multisite intervention studies should pay careful attention to each site's Internet capabilities and policies, anticipate information technology challenges, and work closely with their team to overcome financial challenges. Anticipation and proactive actions to address these issues will improve the likelihood of successful study activation and participation.

Acknowledgments

This project was funded by the National Institute for Occupational Safety and Health (R01OH010582). The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Clinical Resources

- Consolidated Standards of Reporting Trials: http://www.consort-statement.org/
- Good Clinical Practice: https://gcp.nihtraining.com/
- Society of Clinical Research Associates: https://www.socra.org/

References

American Nurses Credentialing Center. (2013). *2014 Magnet application manual*. Silver Spring, MD: Author.

Anger, W. K., Elliot, D. L., Bodner, T., Olson, R., Rohlman, D. S., Truxillo, D. M., ... Montgomery, D. (2015). Effectiveness of total worker health interventions. *Journal of Occupational Health Psychology*, *20*(2), 226–247. doi:10.1037/a0038340

Campbell, M. K., Piaggio, G., Elbourne, D. R., Altman, D. G., & CONSORT Group. (2012). *CONSORT 2010 statement: Extension to cluster randomised trials. BMJ (Clinical Research Ed.), 345*, e5661. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22951546

Connor, T. H., & McDiarmid, M. A. (2006). Preventing occupational exposures to antineoplastic drugs in health care settings. *CA: A Cancer Journal for Clinicians*, *56*(6), 354–365. doi:10.3322/canjclin.56.6.354

Donovan, H. S., Nolte, S., Edwards, R. P., & Wenzel, L. (2014). Nursing research in the Gynecologic Oncology Group. *Seminars in Oncology Nursing*, *30*(1), 44–52. doi:10.1016/j.soncn.2013.12.008

Friese, C. R., McArdle, C., Zhao, T., Sun, D., Spasojevic, I., Polovich, M., & McCullagh, M. C. (2014). Antineoplastic drug exposure in an ambulatory setting: A pilot study. *Cancer Nursing*, *38*(2), 111–117. doi:10.1097/NCC.0000000000000143

Friese, C. R., Mendelsohn-Victor, K., Wen, B., Sun, D., Sutcliffe, K., Yang, J. J., ... DEFENS Study Investigators. (2015). DEFENS—Drug Exposure Feedback and Education for Nurses' Safety: Study protocol for a randomized controlled trial. *Trials*, *16*(1), 171. doi:10.1186/s13063-015-0674-5

Friese, C. R., Siefert, M. L., Thomas-Frost, K., Walker, S., & Ponte, P. R. (2015). Using data to strengthen ambulatory oncology nursing practice. *Cancer Nursing*, *39*(1), 74–79. doi:10.1097/NCC.0000000000000240

HIMSS Analytics. (2015). *Essentials brief: 2015 healthcare IT spending forecast report*. Retrieved from http://www.himssanalytics.org/research/essentials-brief-2015-healthcare-it-spending-forecast-report

Keat, C. H., Sooaid, N. S., Yun, C. Y., & Sriraman, M. (2013). Improving safety-related knowledge, attitude and practices of nurses handling cytotoxic anticancer drug: Pharmacists' experience in a general hospital, Malaysia. *Asian Pacific Journal of Cancer Prevention*, *14*(1), 69–73. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23534806

Lavizzo-Mourey, R. (2015). Why we need to build a culture of health in the United States. *Academic Medicine*, *90*(7), 846–848. doi:10.1097/ACM.0000000000000750

McCullagh, M. C., Ronis, D. L., & Lusk, S. L. (2010). Predictors of use of hearing protection among a representative sample of farmers. *Research in Nursing & Health*, *33*(6), 528–538. doi:10.1002/nur.20410

National Academies of Science, Engineering, and Medicine. (2016). *Federal demonstration partnership: Subaward agreement forms*. Retrieved from http://sites.nationalacademies.org/PGA/fdp/PGA_063626

National Institute for Occupational Safety and Health. (2004). *NIOSH alert: Preventing occupational exposures to antineoplastic and other hazardous drugs in health care settings*. Retrieved from http://www.cdc.gov/niosh/docs/2004-165/pdfs/2004-165.pdf

National Institute for Occupational Safety and Health. (2013). *National Occupational Research Agenda (NORA) national healthcare and social assistance agenda for occupational safety and health research and practice in the U.S. healthcare and social sectors*. Retrieved from http://www.cdc.gov/niosh/nora/comment/agendas/hlthcaresocassist/pdfs/HlthcareSocAssistFeb2013.pdf

National Institute for Occupational Safety and Health. (2016). *A national agenda to advance total worker health research, practice, policy, and capacity*. Retrieved from http://www.cdc.gov/niosh/docs/2016-114/pdfs/nationaltwhagenda2016-1144-14-16.pdf

National Institutes of Health. (2016a). *Drug Exposure Feedback and Education for Nurses' Safety (DEFENS)*. Retrieved from https://clinicaltrials.gov/ct2/show/NCT02283164

National Institutes of Health. (2016b). *Single IRB policy to streamline reviews of multi-site research*. Retrieved from https://www.nih.gov/about-nih/who-we-are/nih-director/statements/single-irb-policy-streamline-reviews-multi-site-research

Office of Management and Budget. (2014). *Uniform administrative requirements, cost principles, and audit requirements for federal awards*. United States. Retrieved from http://www.grants.gov/web/grants/learn-grants/grant-policies/omb-uniform-guidance-2014.html

O'Mara, A., Bauer-Wu, S., Berry, D., & Lillington, L. (2007). A needs assessment of oncology nurses' perceptions of

National Cancer Institute-supported clinical trial networks. *Oncology Nursing Forum*, *34*(2), E23–E27. doi:10.1188/07.ONF.E23-E27

O'Rourke, P. P., Carrithers, J., Patrick-Lake, B., Rice, T. W., Corsmo, J., Hart, R., … Lantos, J. D. (2015). Harmonization and streamlining of research oversight for pragmatic clinical trials. *Clinical Trials (London, England)*, *12*(5), 449–456. doi:10.1177/1740774515597685

Polovich, M., & Clark, P. C. (2012). Factors influencing oncology nurses' use of hazardous drug safe-handling precautions. *Oncology Nursing Forum*, *39*(3), E299–E309. doi:10.1188/12.ONF.E299-E309

Polovich, M., & Martin, S. (2011). Nurses' use of hazardous drug-handling precautions and awareness of national safety guidelines. *Oncology Nursing Forum*, *38*(6), 718–726. doi:10.1188/11.ONF.718-726

Scott, S. D., Osmond, M. H., O'Leary, K. A., Graham, I. D., Grimshaw, J., Klassen, T., & Pediatric Emergency Research Canada (PERC) MDI/spacer Study Group. (2009). Barriers and supports to implementation of MDI/spacer use in nine Canadian pediatric emergency departments: A qualitative study. *Implementation Science*, *4*, 65. doi:10.1186/1748-5908-4-65

Tropman, J. E., & Wooten, L. (2010). Executive leadership: A 7C approach. *Problems and Perspectives in Management*, *8*(4), 47–57.

U.S. Department of Health and Human Services Office of Human Research Protections. (2016). *Engagement of institutions in human subjects research (2008)*. Retrieved from http://www.hhs.gov/ohrp/policy/engage08.html

Weisfeld, V., Lustig, T., & Board of Health Sciences Policy. (2014). *Promising the best practices in total worker health: Workshop summary*. Washington, DC: National Academies Press. Retrieved from https://www.nap.edu/catalog/18947/promising-and-best-practices-in-total-worker-health-workshop-summary

Yevchak, A. M., Fick, D. M., McDowell, J., Monroe, T., May, K., Grove, L., … Inouye, S. K. (2014). Barriers and facilitators to implementing delirium rounds in a clinical trial across three diverse hospital settings. *Clinical Nursing Research*, *23*(2), 201–215. doi:10.1177/1054773813505321

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Development of a Self-Management Theory-Guided Discharge Intervention for Parents of Hospitalized Children

Kathleen J. Sawin, PhD, CPNP-PC, FAAN[1], Marianne E. Weiss, DNSc, RN[2], Norah Johnson, PhD, RN, CPNP-PC[3], Karen Gralton, MS, RN, PCNS-BC[4], Shelly Malin, PhD, RN[5], Carol Klingbeil, DNP, RN, CPNP-PC[6], Stacee M. Lerret, PhD, RN, CPNP-AC/PC, CCTC[7], Jamie J. Thompson, BSN, RN, CPN[8], Kim Zimmanck, MS, RN, PCNS-BC[9], Molly Kaul, MS, RN, PCNS-BC[10], & Rachel F. Schiffman, PhD, RN, FAAN[11]

1 *Alpha & Eta Nu,* Professor Emerita, College of Nursing, University of Wisconsin-Milwaukee, Nurse Scientist, Children's Hospital of Wisconsin, Milwaukee, WI, USA
2 *Delta Gamma & Zeta MU,* Wheaton Franciscan Healthcare - St. Joseph/Sister Rosalie Klein Professor of Women's Health, College of Nursing, Marquette University, Milwaukee, WI, USA
3 *Delta Gamma,* Associate Professor, College of Nursing, Marquette University, Milwaukee, WI, USA
4 *Eta Nu,* Director of Advanced Practice Nursing and Evidenced-Based Practice, Children's Hospital and PhD Student College of Nursing, University of Wisconsin-Milwaukee, Milwaukee, WI, USA
5 *Delta Gamma,* Advocate BroMenn Endowed Professor, Mennonite College of Nursing, Illinois State University, Normal, IL, USA
6 Clinical Assistant Professor, College of Nursing, University of Wisconsin Milwaukee, Milwaukee, WI, USA
7 Assistant Professor, Medical College of Wisconsin, Pediatric Nurse Practitioner, Children's Hospital of Wisconsin, Milwaukee, WI, USA
8 Clinical Nurse, Milwaukee Public School System, Milwaukee, WI, USA
9 Clinical Nurse Specialist, Children's Hospital of Wisconsin, Milwaukee, WI, USA
10 Clinical Nurse Specialist, Children's Hospital of Wisconsin, Milwaukee, WI, USA
11 *Eta Nu & Alpha Chi,* Professor, Associate Dean for Research, Director, Self-Management Science Center at UWM, College of Nursing, University of Wisconsin-Milwaukee, Milwaukee, WI, USA

Key words
Discharge planning, parents, self-management, intervention, pediatric hospitals, pediatric nurses, teach-back, think-forward

Correspondence
Kathleen J. Sawin, PhD, CPNP-PC, FAAN, Nurse Scientist, Department of Nursing Research, Children's Hospital of Wisconsin, Box 1997, MS C 140, Milwaukee, WI 53201-1997.
E-mail: Ksawin@chw.org

Accepted December 20, 2016

doi: 10.1111/jnu.12284

Abstract

Background: Parents of hospitalized children, especially parents of children with complex and chronic health conditions, report not being adequately prepared for self-management of their child's care at home after discharge.
Problem: No theory-based discharge intervention exists to guide pediatric nurses' preparation of parents for discharge.
Purpose: To develop a theory-based conversation guide to optimize nurses' preparation of parents for discharge and self-management of their child at home following hospitalization.
Methods: Two frameworks and one method influenced the development of the intervention: the Individual and Family Self-Management Theory, Tanner's Model of Clinical Judgment, and the Teach-Back method. A team of nurse scientists, nursing leaders, nurse administrators, and clinical nurses developed and field tested the electronic version of a nine-domain conversation guide for use in acute care pediatric hospitals.
Conclusions: The theory-based intervention operationalized self-management concepts, added components of nursing clinical judgment, and integrated the Teach-Back method.
Clinical Relevance: Development of a theory-based intervention, the translation of theoretical knowledge to clinical innovation, is an important step toward testing the effectiveness of the theory in guiding clinical practice. Clinical nurses will establish the practice relevance through future use and refinement of the intervention.

The transition to home-based recovery and continuing management of health needs can be challenging when hospitalized children and their families are not adequately prepared for discharge (Weiss et al., 2008). Many parents report feeling overwhelmed and underprepared for their role in managing their child's care at home within the context of family and work demands (Berry et al., 2011; Lerret & Weiss, 2011; Lerret et al., 2014). Parental concerns about the health of the child at discharge, as well as worry about and difficulty coping with postdischarge health problems, can lead to unplanned utilization of healthcare resources such as unscheduled office visits, emergency department (ED) visits, and readmission to the hospital (Bernstein et al., 2002; Berry, Agrawal, Cohen, & Kuo, 2013; Weiss et al., 2008; Weiss, Ryan, & Lokken, 2006).

Discharge preparation is multifaceted, encompassing inter-related processes of discharge planning, coordination of postdischarge services, and discharge teaching (Weiss et al., 2015). Discharge teaching includes both structured and informal education that ideally begins on admission and culminates with a confirmation on the day of discharge that the child and family are knowledgeable and ready to carry out each component of the plan for care at home after discharge (Berry et al., 2014; Kornburger, Gibson, Sadowski, Maletta, & Klingbeil, 2013). While understanding of the disease process and treatment plans are important, discharge teaching often does not adequately address the broad range of planning, coping skills, and supports needed for the many competing demands on family resources that factor into child and parent self-management at home (Lerret et al., 2014).

While comprehensive discharge preparation is important for all families (Berry et al., 2014), it is particularly critical for children with complex or chronic medical conditions (Lerret & Weiss, 2011; Lerret et al., 2014). These children often have frequent hospitalizations and can account for a substantial number of readmissions and healthcare costs (Berry et al., 2011). The child's health outcomes in the postdischarge period can be compromised when preparation for discharge is not comprehensively planned (Desai, Popalisky, Simon, & Mangione-Smith, 2015). For example, parents of children who had a solid organ transplant reported needing emotional support and guidance in parenting the child in addition to education about the condition and medication administration skills (Lerret et al., 2014). These findings point to the need for better understanding of the optimal communication content, process, and timing in discharge interventions (Samuels-Kalow, Stack, & Porter, 2012).

Comprehensive discharge interventions for adult patients have emerged to support effective hospital discharge and transition to home (Hansen et al., 2013), but are less developed in pediatric hospitals. In a recent review of 14 pediatric intervention studies (asthma, cancer, and neonatal care), 6 were effective at reducing at least one outcome (ED or hospital readmission). Four of the six had a robust inpatient education component, four had a follow-up community component, and all used some type of individualized planning with patients and families. However, none reported a conceptual framework or detail outlining what components of the intervention were successful (Auger, Kenyon, Feudtner, & Davis, 2014). The researchers recommended measuring the extent to which patients and parents feel prepared for self-management upon discharge as a useful outcome to evaluate quality of discharge care. A recently published Framework for Pediatric Hospital Discharge Care provides guidelines for family-centered discharge processes and concurs that discharge readiness is the culmination of the discharge care process (Berry et al., 2014).

Nursing scientists have strongly advocated for theory-based interventions as a mechanism to increase quality and reproducibility of findings (Conn & Groves, 2011; Kazer, Bailey, & Whittermore, 2010; Sidani & Braden, 2011). However, currently there are no theory-based nursing discharge interventions in the nursing literature. Using a theory as the foundation for development of an intervention guides selection of operational components of the intervention. Linking theoretical constructs, measurement of outcomes, and interpretation of the results in light of existing knowledge embedded in the theory provides an understanding of how the intervention works to achieve the desired goals (Conn & Groves, 2011).

This article addresses the gap in theory-based pediatric discharge preparation literature by detailing the development of a clinical nurse-delivered intervention built by a team of nurse scientists, clinical leaders, administrators, and clinical nurses practicing in an acute care pediatric hospital. This Family Self-Management Discharge Preparation Intervention (FSM-DPI), a conversation guide designed to optimize discharge preparation for parents of hospitalized children, was influenced by the Individual and Family Self-Management Theory (IFSMT; Ryan & Sawin, 2009), Tanner's Model of Clinical Judgment in Nursing (Tanner, 2006), and the Teach-Back method aimed at improving patient comprehension of health teaching (Schillinger et al., 2003).

The IFSMT was used to identify and organize the self-management content (the what) of the intervention, which focused on enhancing parental self-management at home. The Model of Clinical Judgment in Nursing was used to structure each of the intervention content areas in a way that facilitated aspects of nursing clinical judgment (the why), and the Teach-Back method was used to suggest how the nurse might address each self-management

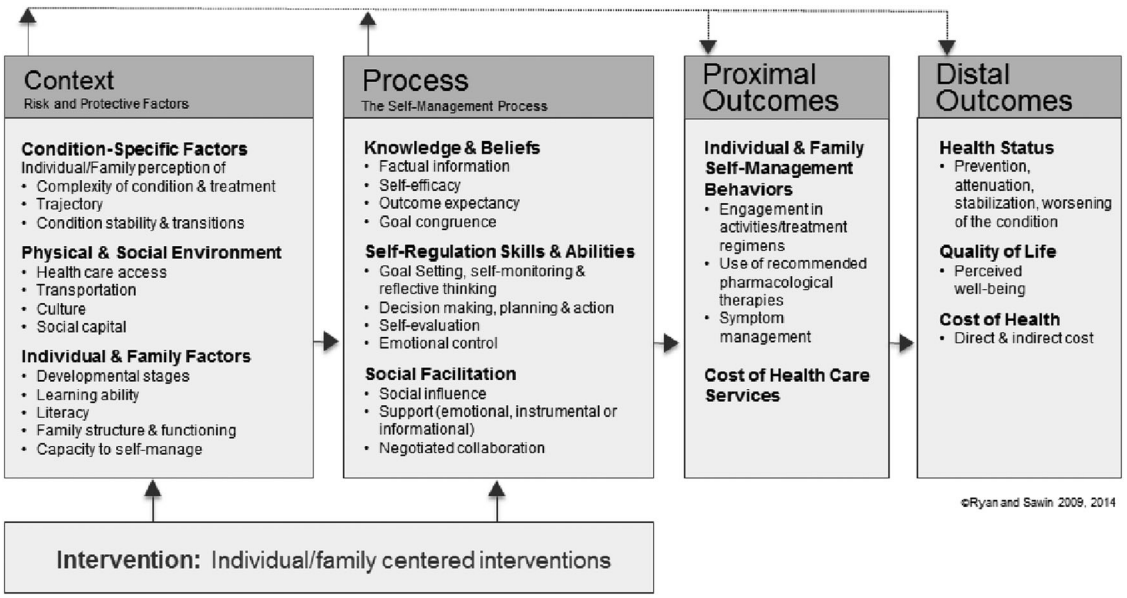

Figure 1. Individual and Family Self-Management Theory

domain (the how). A short description of each will be presented followed by the specific process of developing the pediatric discharge intervention.

Theoretical and Methodological Influences on Intervention Development

Individual and Family Self-Management Theory

The IFSMT (**Figure 1**) is a midrange theory that describes the relationship of concepts in the context and process domains with the proximal (self-management behaviors) and ultimately distal outcomes (health status, quality of life, and cost of health; Ryan & Sawin, 2009). Self-management places the accountability for managing a condition with the individual and/or family and thus changes the focus of care. Concepts in the context domain describe the unique risk and protective factors that will impact the family's ability to carry out self-management. These concepts are divided into three categories: (a) the complexity of the child's condition, (b) the child's physical and social environment, and (c) individual child and family factors.

The concepts in the process domain of the IFSMT capture the child's and parent's learning and the process of developing competency in self-management skills and abilities. These concepts delineate the three categories in the self-management process: (a) knowledge and beliefs, (b) self-regulation, and (c) social facilitation. Learning about the condition prepares the family members to resolve competing goals and develop confidence in their ability to manage a condition. Self-regulation is an iterative problem-solving process and includes a number of skills and abilities such as goal setting, self-monitoring, decision making, planning, and self-evaluation. Both the child and the parent develop skills to deal with the emerging issues. For example, the child or the parent may need to learn the difference between a minor symptom that can be evaluated with a "watch and see" approach and a symptom that needs immediate action. Developing plans and continuous evaluation of the effectiveness of those plans is critical to the process. Emotional adjustments are often a challenging aspect of self-regulation that change throughout development as well as disease progression. Social facilitation provided by healthcare providers, family members, and peers aide the parent in gaining these abilities and skills.

Model of Clinical Judgment in Nursing: The Reflective Practitioner

Tanner's Model of Clinical Judgment in Nursing, or "thinking like a nurse," is a type of engaged moral reasoning. This model, generated from an extensive review of over 200 studies on clinical judgment in nursing, expands the understanding of the complexity of nurses' clinical judgments when caring for a child/family and the perception of what constitutes exquisite care (Tanner, 2006). The model reflects the impact of the nurse's skill, knowledge, pattern recognition, and expectations on the clinical interaction. Knowing the child's objective data and the child or family concerns is foundational but not

Table 1. The Impact of the Research-Based Model of Clinical Judgment on the Development of the Intervention

Tanner findings in synthesis of the literature	Aspects of the process of clinical judgment	Translation to the intervention
Clinical judgments are often influenced as much by what nurses bring to the situation (expectations, knowledge, and pattern recognition) than the objective data encountered. Knowledge of the patient is necessary but not enough for sound clinical judgment. Engaging with the parents and their concerns is necessary, as is an engagement with the child and his or her concerns.	**Noticing** A perceptual grasp of the situation at hand Noticing emerges from (a) nurses' expectations of the situation, which in turn are built on nurses' knowledge of patient's patterns; (b) nurses' experience with and clinical knowledge of like patients, and nurses' scientific knowledge. This stage is where nurses get their initial grasp of the situation.	The prompt statements in the intervention facilitate the nurses "noticing" areas that need to be addressed for successful discharge preparation.
Clinical judgments are complex and are based in the context of the patient/family and the culture of the nursing care unit. They reflect analytic, intuitive and narrative reasoning patterns.	**Interpreting/responding** Nurses' noticing and initial interpretation or grasp of the clinical situation triggers a reasoning pattern and decision on a course of action.	The intervention structure delineates the nurses' interpretation of family preparation, specifically the nurses' assessment of whether the parent has the correct information/plan, incorrect information/incomplete plan, or no understanding or plan for the discharge component.
Nurse engagement in reflection improves learning, expands clinical knowledge, and enhances judgment in complex situations.	**Reflection** Reflection in action is the nurses' ability to "read" how the patient/family is responding to the nursing intervention and adjust the interventions based on that assessment.	The intervention conversation guide is built on the assumption that the nurses' ability to read how the parent is responding to the intervention and adjust activities accordingly is the key to effective discharge preparation.

Note. Adapted from Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education*, *45*(6), 204–211.

sufficient for reflective clinical judgment. Clinical judgment requires not only integration of the parent's or family's complexity, but the nurse's consideration of the complexity of the context of care, including knowledge of the clinical environment and the competing demands of nurse and parent. Tanner describes the process that experienced nurses use as (a) noticing: developing a perception of the situation; (b) interpreting: developing an understanding of the situation; (c) responding: implementing the best course of action for the situation; and (d) reflecting: evaluating the health status and the child or family to determine whether or not the action needs to be revised (**Table 1**).

Teach-Back Method

The Teach-Back method emerged from the health literacy literature (Schillinger et al., 2003), which addressed an individual's ability to obtain and understand health information (Kemp, Floyd, McCord-Duncan, & Lang, 2008; National Quality Forum, 2009; Peter et al., 2015). The Teach-Back method was established with the goals of improving the patients' understanding of their condition, verifying knowledge acquisition, and improving health outcomes (National Quality Forum, 2009). In the Teach-Back method, patients are asked to say back in their own words or "show" through demonstration, the knowledge and skills they have learned from their healthcare provider. It is a way to confirm patients' understanding and ability to apply health information and newly learned skills to manage their health needs. Key tenets of the method include using open-ended questions; grouping information provided into small segments; and checking, clarifying, and rechecking accuracy and completeness of learning. The method has been taught to numerous nurses, therapists, pharmacists, and other interdisciplinary healthcare providers across settings and has been implemented in the healthcare setting for which the discharge preparation intervention was created (Kornburger et al., 2013). While often used in practice, there is limited research on the Teach-Back method. A few researchers have found it to be effective in a range of patient teaching situations (Kemp et al., 2008; Peter et al., 2015; Slater, Dalawari, & Huang, 2013; White, Garbez, Carroll, Brinker, & Howie-Esquivel, 2013). Researchers

have suggested that using the Teach-Back method helps patients transition from having their conditions managed by healthcare providers to becoming better able to self-manage their condition (Haney & Shepherd, 2013; Howie-Esquivel, White, Carroll, & Brinker, 2011). Shifting the focus of discharge preparation from a nurse-to-parent information transfer session to a more interactive process was central to including this method in the intervention. Building and supporting family self-management capacity could improve parent and child outcomes following discharge.

Process of Intervention Development

Initial Development of the Intervention

Collaborators from a clinical academic partnership, the Consortium for Pediatric Nursing Research in Milwaukee, Wisconsin, which included the Children's Hospital of Wisconsin and the Colleges of Nursing at the University of Wisconsin-Milwaukee (UWM) and Marquette University, entered into a dialog to identify a research project of joint interest. Discharge teaching emerged as the priority due to the realities of the clinical environment and current practice, the strategic initiatives of the clinical organization, the expertise of investigators at Marquette University on discharge readiness, and the expertise of investigators at UWM in self-management. The goal of the collaboration was to improve the pediatric discharge process with a nursing intervention. The intervention was aimed at improving the quality of discharge teaching, readiness for discharge, and coping in the postdischarge period by assuring that parents have the necessary self-management knowledge, skills, and abilities to transition to home self-management after a child's hospitalization.

The identification of the problem and the outcomes was consistent with the IFSMT, which delineates, in the process domain, the skills and abilities needed to perform self-management behaviors. The self-management behaviors are proposed to impact child health, individual and family quality of life, and costs of health. Each of the self-management skills and abilities is amenable to change.

Having identified the problem and the expected outcomes, the investigators developed the goals, components of the intervention, model of delivery, and dose (Sidani & Braden, 2011). The investigators recognized that assessments and interventions are carried out throughout the hospitalization, culminating in the child/parent being ready to self-manage the child's care following hospital discharge. The intervention was designed to be used as a single conversation guide, as a "day of discharge" verification of adequacy of family preparation for self-management after discharge, with additional areas of inadequate preparation identified by the nurse. The patient population for this intervention was identified as parents who were taking a child home after a hospitalization of at least 2 days. It was anticipated that the level of discharge preparation included in this intervention would not be necessary for those who were hospitalized for a shorter time period. The unique needs of parents of newborns, children in critical care units, or children discharged to home hospice were not addressed in the intervention. The intervention was therefore appropriate for all other parents of hospitalized children from 0 to 18 years of age who could speak sufficient English to participate in an interactive intervention without an interpreter.

Acknowledging the clinical judgment of the skilled pediatric clinical nurse, the wide variety of medical conditions, the unique needs of families, and the varying discharge needs, the team determined that a structured, but non-condition-specific "conversation guide" would be the most useful and effective intervention to enhance discharge preparation. The investigators' philosophical approach was one that aimed to enhance the already strong judgment of the clinical nurse (Tanner, 2006) by developing a conversation that operationalized the evidence-based components of self-management (Ryan & Sawin, 2009).

The comprehensive approach to development of the FSM-DPI involved incorporating the theory-based approaches and review of the literature on discharge preparations, readiness for discharge, and discharge interventions. The IFSMT formed the basis for the content of the intervention. The key process components of knowledge and beliefs, self-regulation, and social facilitation were incorporated as appropriate into nine content domains of the FSM-DPI: home care, child's care, practice, medications, watching child, recovery, child development, family adjustments, and parent support. The intervention was designed to guide the nurse through evaluation of a series of self-management issues that parents may face at home; facilitate assessment of the family's strengths; validate knowledge, skills, and abilities for managing the child's care; and assist parents in anticipating and solving emerging self-management issues after discharge (**Table 2**). While the content was developed directly from the IFSMT, the clinical nurses "relabeled" the content domains using language that was more congruent with the language a nurse might use when talking to families. For example "monitoring," a component in the IFSMT self-regulation process, was labeled "watching child" by the clinical nurses in our partnership. Because the intervention guide was to be used for children with varying

Table 2. Interactive Discharge Conversation Guide: Preparing Parents to Manage Care at Home (With Confidence)

IFSMT Process Concept Primary Teach-Back Component	Intervention Category	Prompt Statement	RN Assessment	RN Response
Knowledge Talk-back	Medications	**Let's talk about each medication that your child will take at home. (Have parent read list back and talk back.)** • Name and reason for taking • Dose and side effects • Time of administration (if PRN, when will you give it?)	[ ] Verbalizes correct information [ ] Incorrect/unsure about information [ ] No understanding of information	[ ] Positive reinforcement [ ] Supplemental information [ ] Extensive teaching [ ] Corrected information errors [ ] Provided additional resources
Knowledge/self-efficacy Talk-back	Child's care	After listening to you, I think we also need to talk about **I am interested in making sure you are ready to take your child home from the hospital** What part of your child's care do you feel sure you can handle? What are the parts of your child's care that you don't feel sure you can handle? What other information can I get you? What worries or concerns do you have about caring for your child at home? What other questions do you have? After listening to you, I think we also need to talk about	[ ] Verbalized correct information [ ] Incorrect/unsure about information [ ] No understanding of information	[ ] Provided positive reinforcement [ ] Provided supplemental information [ ] Provided extensive teaching [ ] Corrected information errors [ ] Provided additional resources
Demo-back	Practice	**What parts of your child's care have you practiced here in preparing for going home?** (Review teaching checklist to assure all topics have been covered.)	[ ] Demonstrates skills correctly [ ] Needs guidance with demonstration of skills [ ] Unable to demonstrate skills	[ ] Provided positive reinforcement [ ] Provided supplemental information [ ] Provided extensive teaching [ ] Corrected information errors [ ] Provided additional resources
Self-regulation: Monitoring Think-forward	Child development	Many children behave differently than usual after they go home from the hospital. We like to talk to all of our families about the kinds of behaviors parents can expect. Sometimes children regress, or act younger again for a short time. You know your child best. How do you think your child will be at home? (provide example based on developmental level). This kind of temporary behavior is normal; kids are resilient and you should see improvement over time. Kids can act younger for 2–3 weeks. If you find the behavior does not improve after 2–3 weeks, you should discuss it with your nurse or doctor. Here are some things you can do to manage your child's behavior	[ ] Verbalizes correct information [ ] Incorrect/unsure about information [ ] No understanding of information	[ ] Positive reinforcement [ ] Supplemental information [ ] Extensive teaching [ ] Corrected information errors [ ] Provided additional resources [ ] Provided pamphlet on age-specific behaviors

Continued

Journal of Nursing Scholarship, 2017; 49:2, 202–213.

Table 2. *Continued*

IFSMT Process Concept Primary Teach-Back Component	Intervention Category	Prompt Statement	RN Assessment	RN Response
Self-regulation: Monitoring Think-forward	Watching child	**Let's talk about things to watch for in the first few days or weeks after your child is home**: Tell me how you would know if your child is not doing well? What will you/they watch for? What will you do to keep track of these things? **I want to be sure that you know when to call your doctor or nurse when you go home** Tell me what situations would make you want to call your nurse or doctor? What made you bring your child in? What made you nervous about your child's health? What did he/she look like? What are other changes (problems) that would make you bring him/her in? Think about what he/she looked like when you brought him/her in. That's what you might want to compare to in order to know what to watch for.	[ ] Verbalizes correct information [ ] Incorrect/unsure about information [ ] No understanding of information	[ ] Positive reinforcement [ ] Supplemental information [ ] Extensive teaching [ ] Corrected information errors [ ] Provided additional resources
Self-regulation: Problem solving Think-forward	Recovery	**Think for a few minutes about your child going home . . . imagine how you think it will go** Tell me about your child's normal activities, e.g., getting up, eating, going to school or daycare? How will these activities be different while recovering at home? What will your child need help with at home? When do you plan to send him/her back to school? What is your plan for day care, sports, driving, school notes, excuses After listening to you, I think we also need to talk about	[ ] Verbalizes correct information [ ] Incorrect/unsure about information [ ] No understanding of information	[ ] Positive reinforcement [ ] Supplemental information [ ] Extensive teaching [ ] Corrected information errors [ ] Provided additional resources
Self-regulation: Problem solving Think-forward	Family adjustments	**In taking your child home from the hospital, what adjustments will you make?** Have you thought about changes you and your family will have to make for your other children, your job, and/or other family members? In the first few days at home? Long-term changes? After listening to you, I think we also need to talk about	[ ] Vague or unrealistic plans [ ] No plan	[ ] Provided validation of plans [ ] Worked with patient to identify specific plan (parent engaged in planning) [ ] Worked with patient to identify specific plan (parent not engaged in planning) [ ] Reviewed options: home health, ICM, social service, other

Continued

Table 2. *Continued*

IFSMT Process Concept Primary Teach-Back Component	Intervention Category	Prompt Statement	RN Assessment	RN Response
Social facilitation Think-forward	Home care	**Tell me about who will care for your child at home** Who lives with you? When your child goes home, who will be the person (or people) who take care of your child? When you're not home, who takes care of your child? There will be things that other caregivers will need to learn. How will they learn them and when? After listening to you, I think we also need to talk about	[ ] Specific plans identified [ ] Partial plans identified [ ] Vague or unrealistic plans [ ] No plan	[ ] Provided validation of plans [ ] Worked with parent to identify specific plan—parent engaged in planning [ ] Worked with parent to identify specific plan—parent not engaged in planning [ ] Reviewed options: home health, ICM, social service, other [ ] Scheduled teaching time and plan for other caregivers
Social facilitation Think-forward	Parent support	**Some parents share that managing their child's care at home is often stressful** Who will be able to help you with household activities while you take care of the child? Have you identified specific things for your helpers to do? Who can you count on to give you emotional support if you are worried or stressed? If you have questions or need more information on managing your child's care, what resources do you have? After listening to you, I think we also need to talk about	[ ] Specific plans identified [ ] Partial plans [ ] Vague or unrealistic plans [ ] No plan	[ ] Provided validation of plans [ ] Worked with patient to identify specific plan (parent engaged in planning) [ ] Worked with patient to identify specific plan (parent not engaged in planning) [ ] Reviewed options: home health, ICM, social service, other

Note. ICM = interdisciplinary case management; IFSMT = Individual and Family Self-Management Theory; PRN = as needed; RN = registered nurse.

conditions and often with unique contextual factors, the integration of these context factors relied on the nurse's clinical judgment.

Tanner's Model of Clinical Judgment influenced the overall approach and structure of the FSM-DPI. The assumption in creating the intervention was that an interaction or conversation guide was needed that (a) integrated the critical content areas as a "trigger" for the nurse, (b) structured the intervention for ease in documenting the nurse's interpretation and response to the situation, and (c) accommodated the nurse's ability to reflect on the parent's response and alter teaching. The stages of Tanner's Model of Clinical Judgment in Nursing were reflected in the three steps of data collection, interpretation, and nurse response included in the intervention. The team felt the "conversation guide" structure would facilitate the important aspects that the nurse needed to consider and would be flexible enough for the nurse to individualize the discharge preparation, interpret child and parent response, respond to their concerns, and adapt information or activities based on parents' understanding (see **Table 1**).

Teach-back had been implemented in our clinical setting for several years as a method of enhancing communication between healthcare providers and families (Kornburger et al., 2013). In the development of the intervention, "teach-back" was identified by the clinical nurses as central to their work and this discharge activity. For the purposes of intervention development, the Teach-Back method was expanded in two ways. The first was to add precision by specifying the labels for two strategies, talk-back and demo-back. Talk-back was added to imply that verbal responses were expected, and demo-back was added to clearly identify that a skill (e.g., dressing change) required more than parent statements of the procedure. Although the Teach-Back method includes aspects of skill verification, we thought it best to be more specific about expectations. The second expansion was to add a think-forward approach to help the parent project to how the child's care would be managed in the home environment. Think-forward was identified as a strategy during the intervention development sessions. It was an outgrowth of discussions between nurses in the academic and practice partnership and was influenced by Tanner's Model (Tanner, 2006), which includes reflective practice. The think-forward addition was especially useful in helping the parents consider the self-management skills and abilities and the social facilitation they would need to effectively care for their child at home. While some questions used in past "teach-back" initiatives (Peter et al., 2015) addressed the future (e.g., How will you remember to weigh yourself every day? How will you remember to take your medication?), the think-forward strategy in this intervention was new. Think-forward created a way for parents to tell the nurse what they believed would be important aspects of their future circumstances at home and how they planned/prepared for the future. In essence, think-forward gave the nurse feedback on parent planning just as talk-back or demo-back gave the nurse feedback on knowledge and skills.

In the intervention, multiple teach-back strategies can be used in each domain. However, in **Table 2**, we indicated which of three strategies, talk-back, demo-back, or think-forward, was recommended as the primary teaching approach for each of the content domains of the FSM-DPI. For example, a nurse might primarily use "think-forward" to help the parent anticipate and plan for care at home. But if the nurse found that the parent needed supplemental information, he or she would then use "talk-back" to assure the parents understood the additional information provided. Having specific language for these strategies identified in the intervention reflected the exact nature of how the nurse was to obtain feedback from the parent.

The iterative development of the intervention included the following steps: (a) developing the flow sheets for content, (b) having the content evaluated by a panel of clinical nurses who suggested revisions, (c) multiple large group sessions where the content and format was reviewed by team members, (d) relabeling the IFSMT process concepts in language that was more consistent with the terminology and work flow of the clinical nurse, and (e) creating a paper version of the intervention guide for field testing. The academic partners had previously developed the IFSMT (Ryan & Sawin, 2009). In an iterative process that spanned several months and multiple meetings, the academic and clinical partners met jointly to develop the theory-guided intervention, content of the domains, questions, nurse assessment, and nurse actions. Following informal pilot testing with a small number of families assigned to several of the clinical nurses, the joint team revised the conversation guide. **Table 2** is the team's working document of the conversation guide. Column 1 (IFSMT process) shows the IFSMT process categories aligned with the nine content domains to be covered in the interactive conversation (Column 2, Intervention category) and the primary strategy for delivering the intervention (talk-back, demo-back, and think-forward). Column 3 (Prompt), Column 4 (RN assessment), and Column 5 (RN response) operationalize the intervention conversation. The key components are the nurse's prompt statements based on the content (Column 3); the nurse's interpretation of the parent's responses to the content probes about their knowledge, skills, and abilities (Column 4); and the nurse's response,

or action, to validate, reinforce, or modify parents' knowledge, skills, and abilities (Column 5).

After responses to the prompt statements, the nurse could progress directly to interpretation or expand the conversation in each section as warranted based on the assessment of the parent response (After listening to you, I think we also need to talk about ...). The nurse's interpretation section addresses how well the parents are able to verbalize correct information, demonstrate the skill correctly, and generate a plan. Finally, for each of the intervention domains, the nurse indicated the response to the interpretation. Validation and positive reinforcement is to be given if the parent masters the domain. In contrast, if parents do not master the domain, the nurse could respond by using one or more strategies such as providing supplemental information, extensive teaching, correcting information errors, providing additional resources, or providing a pamphlet on age-specific behaviors. There is no required order for progressing through the conversation about each of the FSM-DPI domains. The nurse is free to use the order that meets the family's needs and priorities.

Development of the Electronic Version

Four clinical nurses from two general medical surgical units volunteered to field test the initial printed version of the intervention and provided feedback that the multiple-page document was too cumbersome to use. The team decided to convert the intervention to an electronic format on an iPAD® platform. The intervention was transferred to the iPAD® by computer scientists at Marquette University with expertise in use of mobile devices for health applications. The electronic version is menu driven. Following password-protected login, a home screen is displayed that allows the nurse to see the menu with the nine domains on the left part of the screen and the content for the domain being discussed on the right. Color coding tells the nurse which domains are yet to be discussed (white for not started, yellow for partially complete, green for complete). The domain list remains visible, allowing the nurse to switch between domains if the conversation with the family transitions to a new content area. The structure of the FSM-DPI intervention on the i-PAD® remained the same (see **Table 2**), with each of the three columns from the paper version now visible vertically on the screen. There is a separate screen for each domain. The iPAD® can be connected via the Internet to a secure database for storage of data for evaluating intervention fidelity and outcomes. Retraining using the iPAD® version of the FSM-DPI was conducted. Feedback from the clinical nurses who had field tested the printed version indicated that the iPAD® version was much easier to use and facilitated their workflow in the discharge process.

Implementation Challenges

The main implementation challenge was the logistics of freeing the clinical nurses' time for an in-depth conversation with parents (and child if old enough) that was longer than the standard discharge teaching and required uninterrupted time. Other challenges that arose in preparing for clinical application were primarily operational, including infection control measures for using the iPAD® on clinical units, securing the iPAD® between uses, and maintaining Internet connectivity. Integrating the intervention into an already busy practice requires strategies to facilitate the time needed for this intervention.

The practice partners identified multiple strategies to address these implementation challenges, including (a) "handing off assignments and pagers" to a charge nurse for the intervention implementation time, (b) planning for adequate time for the intervention in staffing assignments if the nurse is assigned a patient being discharged, (c) buddying with a fellow nurse to cover patient assignments during the discharge teaching session, and (d) fully engaging nurse leaders on the unit to support nurses in arranging time to conduct the interactive discharge conversation.

Discussion

The development of the intervention generated multiple "lessons learned." The principal lesson was the power of the academic practice partnership, which created a milieu for "group think." Each of the academic practice partners participated in group think with different perspectives. The clinical nurse perspectives related to everyday clinical practice. The nurse leaders' perspectives highlighted nursing standard workflow on the units, existing systems, and expectations related to discharge. Finally, the academic nurses' perspectives focused on theory, measurement issues, the evidence on discharge preparation and self-management, and approaches to effective teaching.

The practice partners provided leadership throughout the development of the intervention about the feasibility of the content and conversation strategies. This input was central to each stage in the development of the final product. In the iterative discussions, the practice partners affirmed the relevance of the select components of self-management discharge preparation while identifying that some components were not typically addressed at discharge, for example, the child development domain. The

clinical partners also transformed the language used in the conversation guide and led the discussions of how the intervention should be structured for easy flow. During the process, they reported a new appreciation of how complex it is to provide high-quality discharge preparation and were challenged to think differently about implementing an enhanced discharge model within the time constraints of typical day-of-discharge care. Several clinical nurses reported that participating in developing this intervention led them to improve their practice; one nurse indicated that she thought being an active participant in this experience influenced her practice more than if change was implemented as a "typical" practice change.

Conclusions

A theory-based FSM-DPI was developed by nurses in a practice and academic partnership. The self-management and clinical judgment content was carefully translated to domains in an interactive conversation guide. The Teach-Back method was expanded to specifically include talk-back, demo-back, and think forward strategies. A field test by clinical nurses determined that using the printed version of the intervention was cumbersome and an electronic version was created to be tested in a large feasibility study. Operational issues in the clinical setting have been identified and strategies generated to address them. Implementation of the nursing intervention to enhance the pediatric discharge process is expected to improve the quality of discharge teaching, readiness for discharge, and outcomes in the postdischarge period by assuring that parents have the self-management knowledge, skills, and abilities needed to transition to home self-management after a child's hospitalization. The evaluation of this intervention has the potential to generate practice-based evidence for the intervention, the theoretical underpinnings, and the strategies of teach-back used. Evaluation of implementation experiences of nurses and patients is currently in progress. Further assessment of the content validity of the intervention through review by professional content experts and parents as recipients of care is indicated. Finally studies of outcomes attributable to the intervention are needed to determine utility for practice.

Clinical Resources

- Agency for Healthcare Research and Quality: https://www.ahrq.gov/
- Family Caregiver Alliance. Hospital discharge planning: A guide for families and caregivers: https://www.caregiver.org/hospital-discharge-planning-guide-families-and-caregivers
- Project RED: http://www.bu.edu/fammed/projectred/components.html
- Society of Hospital Medicine. Better outcomes by optimizing safe transitions: http://www.hospitalmedicine.org/Web/Quality_Innovation/Implementation_Toolkits/Project_BOOST/Web/Quality___Innovation/Implementation_Toolkit/Boost/Overview.aspx

Acknowledgments

The authors would like to acknowledge Michelle Donlin, BSN, RN, for her contributions to the structure of the intervention and her participation in the field testing of the intervention.

References

Auger, K. A., Kenyon, C. C., Feudtner, C., & Davis, M. M. (2014). Pediatric hospital discharge interventions to reduce subsequent utilization: A systematic review. *Journal of Hospital Medicine*, *9*(4), 251–260. doi:10.1002/jhm.2134

Bernstein, H. H., Spino, C., Baker, A., Slora, E. J., Touloukian, C. L., & McCormick, M. C. (2002). Postpartum discharge: Do varying perceptions of readiness impact health outcomes? *Ambulatory Pediatrics*, *2*(5), 388–395.

Berry, J. G., Agrawal, R., Cohen, E., & Kuo, D. (2013). *The landscape of medical care for children with medical complexity*. Alexandria, VA and Overland Park, KS: Children's Hospital Association. Retrieved from https://www.childrenshospitals.org/issues-and-advocacy/children-with-medical-complexity/issue-briefs-and-reports/the-landscape-of-medical-care-for-children-with-medical-complexity

Berry, J. G., Blaine, K., Rogers, J., McBride, S., Schor, E., Birmingham, J., … Feudtner, C. (2014). A framework of pediatric hospital discharge care informed by legislation, research, and practice. *JAMA Pediatrics*, *168*(10), 955–962; quiz 965–956. doi:10.1001/jamapediatrics.2014.891

Berry, J. G., Hall, D. E., Kuo, D. Z., Cohen, E., Agrawal, R., Feudtner, C., … Neff, J. (2011). Hospital utilization and characteristics of patients experiencing recurrent readmissions within children's hospitals. *Journal of the American Medical Association*, *305*(7), 682–690. doi:10.1001/jama.2011.122

Conn, V. S., & Groves, P. S. (2011). Protecting the power of interventions through proper reporting. *Nursing Outlook*, *59*(6), 318–325. doi:10.1016/j.outlook.2011.06.003

Desai, A. D., Popalisky, J., Simon, T. D., & Mangione-Smith, R. M. (2015). The effectiveness of family-centered transition processes from hospital settings to home: A review of the literature. *Hospital Pediatrics*, *5*(4), 219–231. doi:10.1542/hpeds.2014-0097

Haney, M., & Shepherd, J. (2013). Can teach-back reduce hospital readmissions? *American Nurse Today*, *9*(3), 50–52.

Hansen, L. O., Greenwald, J. L., Budnitz, T., Howell, E., Halasyamani, L., Maynard, G., ... Williams, M.V. (2013). Project BOOST: Effectiveness of a multihospital effort to reduce rehospitalization. *Journal of Hospital Medicine*, *8*(8), 421–427.

Howie-Esquivel, J., White, M., Carroll, M., & Brinker, E. (2011). Teach-back is an effective strategy for educating older heart failure patients. *Journal of Cardiac Failure*, *17*(8, Suppl.), S103. doi:10.1016/j.cardfail.2011.06.345

Kazer, M. W., Bailey, D. E., & Whittermore, R. (2010). Out of the black box: Expansion of a theory-based intervention to self-manage the uncertainty associated with active surveillance (AS) for prostate cancer. *Research and Theory for Nursing Practice*, *24*(2), 101–112.

Kemp, E. C., Floyd, M. R., McCord-Duncan, E., & Lang, F. (2008). Patients prefer the method of "tell back-collaborative inquiry" to assess understanding of medical information. *Journal of the American Board of Family Medicine*, *21*(1), 24–30. doi:10.3122/jabfm.2008.01.070093

Kornburger, C., Gibson, C., Sadowski, S., Maletta, K., & Klingbeil, C. (2013). Using "teach-back" to promote a safe transition from hospital to home: An evidence-based approach to improving the discharge process. *Journal of Pediatric Nursing*, *28*(3), 282–291. doi:10.1016/j.pedn.2012.10.007

Lerret, S. M., & Weiss, M. E. (2011). How ready are they? Parents of pediatric solid organ transplant recipients and the transition from hospital to home following transplant. *Pediatric Transplantation*, *15*(6), 606–616. doi:10.1111/j.1399-3046.2011.01536.x

Lerret, S. M., Weiss, M. E., Stendahl, G., Chapman, S., Neighbors, K., Amsden, K., ... Alonso, E. M. (2014). Transition from hospital to home following pediatric solid organ transplant: Qualitative findings of parent experience. *Pediatric Transplantation*, *18*(5), 527–537. doi:10.1111/petr.12269

National Quality Forum. (2009, March). Health literacy: A linchpin in achieving national goals for health and healthcare. *National Quality Forum Issue Brief*, No. *13*, 1–5.

Peter, D., Robinson, P., Jordan, M., Lawrence, S., Casey, K., & Salas-Lopez, D. (2015). Reducing readmissions using teach-back: Enhancing patient and family education. *Journal of Nursing Administration*, *45*(1), 35–42. doi:10.1097/NNA.0000000000000155

Ryan, P., & Sawin, K. J. (2009). The Individual and Family Self-Management Theory: Background and perspectives on context, process, and outcomes. *Nursing Outlook*, *57*(4), 217–225, e216. doi:10.1016/j.outlook.2008.10.004

Ryan, P. A., & Sawin, K. J. (2014). Individual and family self-management theory [Revised Figure]. Retrieved from http://www4.uwm.edu/nursing/about/centers-institutes/self-management/theory.cfm.

Samuels-Kalow, M. E., Stack, A. M., & Porter, S. C. (2012). Effective discharge communication in the emergency department. *Annals of Emergency Medicine*, *60*, 152–159.

Schillinger, D., Piette, J., Grumbach, K., Wang, F., Wilson, C., Daher, C., ... Bindman, A. B. (2003). Closing the loop: Physician communication with diabetic patients who have low health literacy. *Archives of Internal Medicine*, *13*(1), 83–90.

Sidani, S., & Braden, C. J. (2011). *Design, evaluation, and translation of nursing interventions*. Oxford, UK: Wiley-Blackwell.

Slater, B., Dalawari, P., & Huang, Y. (2013). Does the teach-back method increase patient recall of discharge instructions in the emergency department? *Annals of Emergency Medicine*, *62*(4, Suppl.), S20. doi:10.1016/j.annemergmed.2013.07.335

Tanner, C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *Journal of Nursing Education*, *45*(6), 204–211.

Weiss, M., Bobay, K. L., Bahr, S. J., Costa, L., Hughes, R. G., & Holland, D. E. (2015). A model for hospital discharge preparation: From case management to care transition. *Journal of Nursing Administration*, *45*(12), 606–614. doi:10.1097/NNA.0000000000000273

Weiss, M., Johnson, N. L., Malin, S., Jerofke, T., Lang, C., & Sherburne, E. (2008). Readiness for discharge in parents of hospitalized children. *Journal of Pediatric Nursing*, *23*(4), 282–295. doi:10.1016/j.pedn.2007.10.005

Weiss, M., Ryan, P., & Lokken, L. (2006). Validity and reliability of the Perceived Readiness for Discharge After Birth Scale. *Journal of Obstetric Gynecologic and Neonatal Nurses*, *35*(1), 34–45.

White, M., Garbez, R., Carroll, M., Brinker, E., & Howie-Esquivel, J. (2013). Is "teach-back" associated with knowledge retention and hospital readmission in hospitalized heart failure patients? *Journal of Cardiovascular Nursing*, *28*(2), 137–146. doi:10.1097/JCN.0b013e31824987bd

JOURNAL OF NURSING SCHOLARSHIP

HEALTH POLICY AND SYSTEMS

CE

Categorizing the Magnitude and Frequency of Exposure to Uncivil Behaviors: A New Approach for More Meaningful Interventions

Dena Evans, EdD, MPH, MSN, RN, CNE, CNL

Associate Director, Undergraduate Division, UNC Charlotte School of Nursing, Charlotte, NC, USA

Key words
Bullying, health care, incivility, intention, interventions

Correspondence
Dr. Dena Evans, UNC Charlotte School of Nursing, 9201 University City Blvd., Charlotte, NC 28223. E-mail: devans37@uncc.edu

Accepted November 20, 2016

doi: 10.1111/jnu.12275

Abstract

Purpose: To examine turnover intentions, as well as the prevalence and frequency of uncivil behaviors, from the perspective of registered nurses, respiratory therapists, and imaging professionals, using a new method to categorize exposure magnitude.

Design and Methods: Data were collected using the 22-item Negative Acts Questionnaire-Revised (NAQ-R). Additional items, informed by Price and Mueller's causal model of turnover, were included, as were select demographic variables. The final sample included 170 healthcare professionals. Descriptive statistics were used to describe the sample, a chi-square test was constructed to test for significant differences in exposure to uncivil behavior based on demographics, and Cochran-Mantel-Haenszel statistics were used to test associations between variables and calculation of raw sum scores to implement a new method of analysis for the NAQ-R, allowing for categorization of exposure magnitude.

Findings: Exposure to uncivil behavior was reported more often among nursing staff than other healthcare professionals. Lack of exposure to uncivil behavior was a significant predictor of intention to stay. Perceptual differences were found between nurses prepared at the baccalaureate and associate degree levels. Lastly, no significant correlations between exposure to uncivil behavior and selected demographic variables were found, suggesting that exposure is not dependent upon age, race, unit type, or educational level.

Conclusions: Findings support prior research associating negative organizational climate with higher turnover intentions. Uncivil behavior was reported across the organization, most predominantly among units staffed with nurses. Finally, use of newly defined cutoff points for the NAQ-R provide organizations with the ability to use both subjective and objective data to identify targets of uncivil behaviors to construct meaningful interventions.

Clinical Relevance: There is a need to develop more meaningful interventions to support targets of uncivil behaviors. Use of the NAQ-R, coupled with the proposed cutoff scores, allows for the identification of targets, the magnitude of exposure, and the construction of meaningful primary, secondary, and tertiary intervention programs that may improve turnover and quality of care.

Journal of Nursing Scholarship, 2017; 49:2, 214–222.

Workplace incivility includes behaviors such as persistent rudeness, yelling, interrupting, undermining, ignoring someone, spreading rumors, and even violence (Sheridan-Leos, 2008). Incivility, also referred to as bullying (Bartlett & Bartlett, 2011; Simons, Stark, & DeMarco, 2011), lateral or horizontal violence (Sheridan-Leos, 2008;Vessey, Demarco, & DiFazio, 2010), and disruptive behavior (The Joint Commission, 2008), is difficult to define; however, perhaps the most comprehensive definition comes from Clark (2009), who defined incivility as "Rude or disruptive behaviors which often result in psychological or physiological distress for the people involved and if left unaddressed, may progress into threatening situations" (p. 194).

Uncivil behaviors in healthcare organizations have been widely studied, primarily in nursing. Research shows that uncivil behaviors impact employee satisfaction, nurse turnover, morale (Chang, Ma, Chiu, Lin, & Lee, 2009; Kalisch, Lee, & Rochman, 2010), client outcomes (Burke, Grobman, & Miller, 2013; Havens, Vessey, Gittell, & Lin, 2010; McCaffrey et al., 2012; Rosenstein & O'Daniel, 2006), and psychological well-being (Ortega, Christensen, Hogh, Rugulies, & Borg, 2011). Although the impact of incivility in the nursing profession has been widely studied, a lack of evidence exists on the presence of uncivil behaviors in other professions. Additionally, no meaningful method of categorizing exposure magnitude exists. Therefore, this study sought to examine turnover intentions, as well as the prevalence and frequency of uncivil behaviors, from the perspective of registered nurses, respiratory therapists, and imaging professionals, using a new method to categorize exposure magnitude in a private, not-for-profit healthcare organization in Southeastern North Carolina.

Background

Incivility in the workplace has gained increasing national attention. Consequently, efforts to raise awareness and to provide some measure of recourse for victims of incivility, have been on the rise. As early as 1998, an editorial in the Washington Post called for a legislative solution to combat workplace harassment for all, without the protected class limitations imposed by Title VII of the 1964 Civil Rights Act (Namie, 2003). Next, in 2001, Law Professor David Yamada began a grassroots movement to introduce anti-bullying laws in every state. To date, Yamada's Healthy Workplace Bill (HWB) has been introduced in 30 states and 2 territories. While not widely adopted, the HWB raised awareness of workplace incivility (HWB, 2014). Unlike Title VII, the HWB does not require that victims have protected status, thereby addressing gaps in current state and federal laws. Instead, the bill provides all victims the right to pursue legal action against the perpetrator, holds the organization accountable, and gives employers a legal avenue to terminate perpetrators of uncivil behavior (Yamada, 2013).

As a result of increased awareness, and research supporting the deleterious impact of incivility in the workplace, healthcare facilities, accrediting agencies, and professional organizations have proposed measures to combat the issue. In 2008, The Joint Commission issued a sentinel event alert titled "Behaviors that undermine a culture of safety." The alert identified uncivil behaviors such as verbal outbursts, physical threats, uncooperative attitudes, and intimidation that, if not addressed, could lead to poor client outcomes, reduced client satisfaction, medical errors, and increased cost. Consequently, organizations were encouraged to adopt zero tolerance policies for these behaviors. The alert also prompted the establishment of a new leadership standard that was included in the accreditation, standards which require that organizations establish codes of conduct and implement processes for managing uncivil behaviors (The Joint Commission, 2008).

Professional organizations soon followed The Joint Commission in its efforts to address incivility. The American Medical Association, the American Association of Critical Care Nurses, and the American Nurses Association (ANA) all developed position statements related to incivility in the workplace (Plonien, 2016). In 2015, using the ANA Code of Ethics for Nurses (ANA, 2015b) as a framework, the ANA's Professional Issues Panel on Incivility, Bullying, and Workplace Violence developed a revised position statement which charges all registered nurses, and employers in all settings to "create a culture of respect that is free of incivility, bullying, and workplace violence" (ANA, 2015a, para. 1). The position statement also provides organizations with a framework to provide primary, secondary, and tertiary prevention measures and recommends the establishment of zero tolerance policies for workplace violence and incivility.

The organization, which served as the setting for the study, recognized the legislative and regulatory trends related to incivility in the workplace. There were no complete, systematic, or formal processes in place to deal specifically with incivility, and no formal training of staff in effective conflict resolution, interprofessional communication, or the development of skills required to work as a team. Moreover, an analysis of qualitative data retrieved from an internally created participant feedback tool, administered to participants ($n = 120$) upon completion of an American Nurses Credentialing Center–approved preceptor education course, consistently identified the need for more training in these areas to effectively address incivility. In addition to the results

Table 1. 2013 Nursing Turnover Rates by Unit (Greater Than National Average)

Turnover rate (%)	Unit type
15.38	Obstetrics/newborn
20.00	Intensive care unit
20.51	Operating room
20.69	Surgical
22.58	Intensive care unit
23.68	Emergency
24.39	Medical/surgical
25.00	Outpatient
25.53	Intensive care unit
28.57	Intensive care unit

of the feedback tool, nursing turnover data revealed an overall turnover rate of 14%, well within the national average reported by a 2011 KPMG Healthcare and Pharmaceutical Institute survey on U.S. hospital nursing labor. However, turnover on individual units revealed more significant issues (**Table 1**). Collectively, these concerns became the impetus for the study. Turnover data were requested for non-nursing positions; however, the organization only formally tracked nursing turnover.

Methods

An exploratory, cross-sectional survey research design was used to collect data related to the prevalence and frequency of exposure to uncivil behaviors among registered nurses, respiratory therapists, and imaging professionals; categorize exposure magnitude; and explore turnover intentions.

Phase 1 of the study began with identifying a reliable and valid instrument that could be applied in the healthcare setting. Several instruments emerged from the literature review, including the Organizational Civility Scale (Clark, Landrum, & Nguyen, 2013), the Nursing Incivility Scale (Guidroz, Burnfield-Geimer, Clark, Schwetschenau, & Jex, 2010), the Workplace Incivility Scale (Cortina, Magley, Williams, & Langhout, 2001), and the Negative Acts Questionnaire-Revised (Einarsen, Hoel, & Notelaers, 2009). The 22-item Negative Acts Questionnaire-Revised was selected for use in the study because of its widespread national and international usage (Abe & Henly, 2010; Nam, Kim, Kim, Koo, & Park, 2010; O'Farrell & Collins, 2005; Tsuno, 2010; Vogelpohl, Rice, Edwards, & Bork, 2013); strong construct validity, factor structure, and psychometric properties (Beckmann, 2012; Einarsen et al., 2009); and successful use across multiple professions in a variety of organizational settings (Etienne, 2014; Hogh, Hansen, Mikkelsen, & Persson, 2012). The 22 items on the NAQ-R are written in behavioral terms and avoid the use of terms such as bullying, harassment, or incivility. Respondents are asked about frequency of exposure to "negative acts" within the last 6 months, with responses ranging from (a) "never," (b) "now and then," (c) "monthly," (d) "weekly," and (e) "daily." Issues with the original 23-item NAQ appeared when the instrument was translated to English; therefore, the authors revised the tool for international use. During the revision, confirmatory factor analyses revealed a three-factor structure: work-related bullying, person-related bullying, and physical intimidation bullying (Einarsen et al., 2009). The revised tool (NAQ-R), resulting in the English version of the NAQ-R used in the current study, has demonstrated high internal reliability, with Cronbach's α ranging from .89 to .93 (Einarsen et al., 2009). Pearson product moment correlation coefficients between raw sum scores and a respondent's perception of being bullied demonstrated a strong positive correlation ($r = .54$, $p < .001$), further supporting the tool's reliability. Construct validity was determined using an analysis of variance (ANOVA) which demonstrated that victims of bullying reported higher scores on the instrument than nonvictims ($p < .001$; Einarsen et al., 2009).

To address intent to leave the organization, four statements informed by Price and Mueller's (1981) causal model of turnover were included in the demographic section of the survey, exclusive of the NAQ-R. The statements "I plan to leave the organization as soon as possible;" "I would be reluctant to leave the organization;" "I plan to stay with the organization as long as possible;" and "Under no circumstance will I voluntarily leave the organization" were rated using Likert-type scale responses that ranged from 1 = "*strongly disagree*" to 5 = "*strongly agree*." Price and Mueller's causal model of turnover has been tested extensively to explore turnover, and repeated estimations of the model determined the model to be empirically sound (Price, 2000). Additional exploration of the model by Price and Mueller (1981) and others (Brewer, Kovner, Green, Tukov-Shusher & Djukic, 2012; Chang, Wang, & Huang, 2013; Sawatzky & Enns, 2012; Harrison, Newman, & Roth, 2006) found intention to be the strongest predictor of turnover, thereby supporting the construct validity of the model and its use in the current study. Demographic questions of interest included age, race, gender, level of education, unit type, length of time with the organization, and primary offender related to negative acts.

Phase 2 consisted of stakeholder meetings to discuss instrument content and elicit feedback for potential changes. Representatives from nursing, imaging, and respiratory therapy were in attendance. Feedback was minimal and resulted in no changes to the instrument.

Phase 3 included pilot testing of the instrument to assess face validity and length of time required for completion, and to determine feasibility of the study. Following this process, the instrument was distributed organization-wide. All data collection activities were approved by the institutional review board of the organization.

Data Collection

Following pilot testing, Phase 4 of the process was initiated beginning with formatting of the survey for online administration using SurveyMonkey® (SurveyMonkey, Palo Alto, CA). Survey settings were adjusted to ensure that Internet protocol (IP) addresses would not be collected and that responses could not be linked to any individual participant. The survey included an option to opt out of the study at any time, as well as contact information for the principal investigator. Measures to ensure data security and confidentiality were also explained in the survey. A flyer was created to inform targeted staff of the location of the survey on the organization's intranet. Consent was implied by participants' completion and submission of the survey.

The survey was launched organization-wide via the corporate intranet, targeting 1,300 staff members from nursing, respiratory therapy, and imaging, across all campuses. E-mail reminders were sent to staff weekly for 3 weeks. One hundred and seventy surveys were returned, for a 13% response rate. While response rates for online, web-based surveys vary, according to Porter and Whitcomb (2003), low survey response rates have led to the common practice of using survey data with response rates of less than 50%. In the current study, a number of evidence-based techniques (Barriball & White, 1999; Dillman, Smyth, & Christian, 2009; Miller & Smith, 1983) were employed to reduce response bias. These techniques included (a) notifying individuals via flyer before the survey was launched, (b) ordering survey questions so that questions of interest were placed before demographic data requests, (c) including a survey statement informing participants of the importance of the survey and its results, and (d) sending weekly reminders to complete the survey during the 3-week window of opportunity.

Data Analysis

All completed survey instruments were analyzed using the statistical software package SAS© Version 9 of the SAS System for Unix (SAS Institute Inc., Cary, NC, USA). Data analysis began with an evaluation of missing data. The analysis revealed less than 1% missing data; therefore, person mean substitution was used to impute missing values. To test the associations between variables, the PROC FREQ computation was used to produce three Cochran-Mantel-Haenszel statistics: (a) a correlation statistic, (b) ANOVA and row mean scores differ, and (c) a general association statistic (Walker, 2010).

Table 2. Categorization of Exposure (Cutoff Values)

	Not bullied	Occasionally bullied	Victims
Scores	Sum < 33	$45 >$ sum ≥ 33	Sum ≥ 45

Raw sum scores for individual NAQ-R responses were calculated to categorize respondents based on Notelaers and Einarsen's (2013) new method of analysis, which eliminates dichotomizing of uncivil behavior, which produces less accurate results. This method of calculation allows organizations to see that incivility occurs across a continuum and provides for greater focus on targets of the behavior. Notelaers and Einarsen's cutoff values were developed using a receiver operation characteristic, which is considered to be the gold standard when attempting to improve discrimination between categories of subjects (Pintea & Moldovan, 2009). Calculating raw sum scores produces a lower threshold and a higher threshold (cutoff values), allowing for categorization of exposure (**Table 2**).

Results

Sample Demographics

Analysis of sample demographics revealed that there were 88 (93.62%) female and 6 (6.38%) male respondents. Racial representation in the sample (**Table 3**) was predominantly Caucasian ($n = 82$, 86.32%), with the largest minority group being African American ($n = 5$, 5.26%). The age of the survey respondents ranged from 20 to 68 years, with an average age of 38 years. The majority of respondents ($n = 44$, 47.31%) held an associate degree in their field and 36 (38.7%) held a bachelor's degree or higher. Twenty-five (26.32%) of the respondents worked in respiratory therapy ($n = 11$)

Table 3. Race/Ethnicity of Respondents

Race/ethnicity	% (*n*)
Asian/Pacific Islander	1.05 (1)
Black/African American	5.26 (5)
Hispanic/Latino	1.05 (1)
Native American/American Indian	2.21 (2)
White	86.32 (82)
Two or more races	4 (4)

and radiology ($n = 14$), and the remaining 73.68% of the respondents consisted of nurses from across the organization.

Categorization, Prevalence, and Frequency

A raw sum score was calculated for each respondent. Using Notelaers and Einarsen's (2013) cutoff values and categorization schema of "not bullied," "occasionally bullied," and "severely bullied," results revealed that 28% of respondents perceived themselves to be "occasionally bullied," and 11.83% identified as victims of "severe bullying." The frequency distribution of responses to individual items is found in **Table 4**.

A chi-square test was constructed to test for significant differences in exposure to uncivil behavior based on demographics. No significant differences were found between exposure to bullying and unit type, age, education level, or years with the organization. Over 50% of respondents working on medical surgical units ($n = 12$) identified themselves as either occasionally bullied or as victims of severe bullying. In contrast, only 19% ($n = 2$) and 14.28% ($n = 2$) of respondents from respiratory therapy and radiology, respectively, considered themselves as occasionally bullied or victims of bullying. The lack of a statistically significant association between unit type and exposure to uncivil behaviors suggests that the behaviors occur in all units.

Those with the organization less than 1 year were less likely to be victims of bullying than those employed by the organization for several years. Reports of exposure to occasional bullying increased the longer the respondent was employed by the organization.

Turnover Intentions

Turnover intentions were measured through the use of four items and a chi-square test constructed to test for association between bullying and the four intention statements. Respondents who strongly disagreed with the statement "I plan to leave the organization as soon as possible" had a higher probability of not being bullied ($p < .0001$). Respondents who strongly agreed with the statement "I would be reluctant to leave the organization" were more likely to identify as not being bullied ($p = .0002$), and respondents who strongly agreed with "I plan to stay with the organization as long as possible" had a higher probability of not being bullied ($p < .0001$). The final intention item, "Under no circumstance will I voluntarily leave the organization," revealed similar results. Respondents who agreed or strongly agreed with the statement had a higher probability of not being bullied ($p = .0006$). To determine the primary perpetrator of bullying behaviors within the organization, a frequency distribution was created (**Table 5**).

Discussion

This study found no significant differences between exposure to uncivil behaviors and selected demographic variables, suggesting that exposure is not dependent upon age, race, or educational level. Moreover, while turnover rates were higher on some units, no significant correlations were found between exposure to incivility and unit type. Rather, exposure was identified throughout the organization, though reported exposure percentages were higher on medical surgical units and lower in the respiratory therapy and imaging departments. Other research supports the differences in reported exposure found within this study. Studies (DeKeyser et al., 2015; Lee, Bernstein, Lee, & Nokes, 2014) have shown that while uncivil behaviors existed across healthcare settings and professions, nurses were more likely to be victims. Others (Carayon & Gurses, 2008; Dellasega, 2011; Roche, Diers, Duffield, & Catling-Paull, 2010; Vessey, Demarco, Gaffney, & Budin, 2009) found that healthcare providers working in acute care arenas, or areas within high patient acuity levels, were more likely to experience incivility, stress, and burnout than their counterparts working in areas deemed less stressful.

Perceptual differences, with regard to bullying exposure, were found between respondents prepared at the associate degree level ($n = 44$, 47.31%) and those with a bachelor's degree or higher ($n = 36$, 38.7%), which may be linked to major differences in educational preparation. Baccalaureate nursing programs must ensure that curricula provide sufficient opportunities for students to achieve the nine American Association of Colleges of Nursing (AACN) essentials (AACN, 2008), specifically "Essential VI: Interprofessional Communication and Collaboration to Improve Patient Health Outcomes." Additionally, baccalaureate programs include courses in nursing leadership and management, not traditionally part of associate degree curricula. The Commission on Accreditation of Respiratory Care (2015) also provides program Accreditation Standards for Entry into Respiratory Care Professional Practice. These standards state that programs must include education and training in working with interprofessional teams and diverse populations (Goal 4.05), as well as training in leadership and management (Goal 4.03), at the bachelor's level and higher. Therefore, it is possible that those educated beyond the associate degree level have a greater awareness of what constitutes uncivil behaviors and are therefore more accurately able to identify themselves as having

Table 4. Negative Acts Questionnaire-Revised

	Frequencies of negative behaviors	Never	Now and then	Monthly	Weekly	Daily	Missing
1.	Someone withholding information which affects your performance.	44.1	36.5	8.2	7.6	2.9	0.6
2.	Being humiliated or ridiculed in connection with your work.	51.2	34.1	4.1	8.2	0.6	1.8
3.	Being ordered to do work below your level of competence.	52.4	35.3	1.8	7.1	2.9	0.6
4.	Having key areas of responsibility removed or replaced with more trivial tasks.	58.2	27.1	6.5	2.9	4.1	1.2
5.	Spreading of gossip and rumors about you.	50.6	32.9	3.5	5.9	4.1	2.9
6.	Being ignored or excluded.	38.8	43.5	5.3	7.6	3.5	1.2
7.	Having insulting or offensive remarks made about your person.	55.9	30.0	5.3	4.1	1.2	3.5
8.	Being shouted at or being the target of spontaneous anger.	53.5	34.7	5.9	3.5	0.6	1.8
9.	Intimidating behavior such as finger-pointing, invasion of personal space, shoving, blocking your way.	82.9	11.8	2.4	1.8	0	1.2
10.	Hints or signals from others that you should quit your job.	82.4	15.9	0	0.6	0	1.2
11.	Repeated reminders of your errors or mistakes.	71.2	20.6	2.4	2.4	1.2	2.4
12.	Being ignored or facing a hostile reaction when you approach.	67.1	24.1	2.9	4.7	1.2	0
13.	Persistent criticism of your work and effort.	71.8	20.6	1.8	2.9	0.6	2.4
14.	Having your opinions ignored.	45.3	39.4	5.3	4.7	2.9	2.4
15.	Practical jokes carried out by people you do not get along with.	87.1	11.2	1.2	0	0.6	0
16.	Being given tasks with unreasonable deadlines.	74.1	20.6	2.4	2.4	0.6	0
17.	Having allegations made against you.	73.5	22.9	1.8	1.2	0	0.6
18.	Excessive monitoring of your work.	65.9	23.5	2.4	4.1	2.9	1.2
19.	Pressure not to claim something which by right you are entitled to.	77.6	14.7	4.1	1.8	1.2.	0.6
20.	Being the subject of excessive sarcasm.	81.8	14.7	0	2.4	0	1.2
21.	Being exposed to an unmanageable workload.	52.9	32.9	2.9	7.1	4.1	0
22.	Threats of violence or physical or actual abuse.	91.8	4.7	0	0	0.6	2.9

Note. Values are percentages.

been exposed to such behaviors. While similar accreditation guidelines exist for radiologic technology programs through the Joint Review Committee on Education in Radiologic Technology (2014a, 2014b), the minimum competency-based standards do not include language related to leadership or interprofessional communication, although programs may add additional curriculum content. Therefore, variation among curricula is likely.

Lack of exposure to bullying behavior was a significant predictor of respondents' intention to stay with the organization. These findings support prior research that revealed work environment has a much greater impact on intention to leave than individual characteristics (Apker, Propp, & Ford, 2009; Coomber & Barriball, 2007; van der Hiejden, van Dam, & Hasselhorn, 2009). While many factors are involved in creating a positive, healthy work environment, the results of this study support previous research that has identified the need to create and sustain working environments that promote civil, collegial relationships (Borhani, Tayebeh, Abbaszadeh, & Haghdoost, 2013; Gregory, Way, LeFort, Barrett, & Parfrey, 2002; Kanter, 1993; Laschinger, Finegan, & Wilk, 2009; Yang, Liu, Huang, & Zhu, 2013).

Table 5. Frequency Primary Perpetrator

Survey item	Response frequency
Administrator	4.3%
Patient	12.2%
Co-worker	53%
Provider	14.8%
Supervisor	13%
Other	7%

This study had several limitations. First, the sample was one of convenience, the survey response rate was low, and the sample was small; there was also a lack of racial, ethnic, and gender diversity, which may limit generalizability. However, the lack of diversity within the sample mirrors the healthcare profession as a whole, particularly nursing. Participation was limited to nursing, respiratory therapy, and imaging professionals. The addition of providers and other allied health disciplines would expand the generalizability of results. The geographic location was limited to one organization in southeastern North Carolina, and the majority of respondents were prepared at the associate degree level, which may further limit the ability to generalize results.

Clinical Significance

Despite its limitations, this study has useful implications for healthcare organizations, and all members of the healthcare team, related to uncivil behaviors and turnover. It is imperative for organizations to understand the impact that workplace incivility has on the psychological and physiological well-being of its employees, and by extension, the quality of care provided to its clients. Furthermore, organizations must understand that incivility is not simply a unit-based issue but, if left unattended, will permeate the entire organization, negatively impacting organizational climate, culture, and outcomes. Additionally, understanding that bullying occurs on a continuum and is not a dichotomous occurrence is crucial. Using the raw sum cutoff scores, versus a simple average score, allows organizations to effectively categorize respondents across this continuum. In doing so, organizational resources may be used more effectively through the development of targeted programs that include primary, secondary, and tertiary interventions, as recommended by the ANA (2015a). By ensuring that scarce clinical resources, specifically financial and human resources, are being used to address incivility in a meaningful way, organizations stand to experience tremendous gains in improved patient outcomes, increased morale, and decreased turnover.

Clinical Resources

- American Nurses' Association. Position statement on incivility, bullying and workplace violence: http://www.nursingworld.org/positionstatements
- Healthy Workplace Bill: http://healthyworkplacebill.org
- Workplace Bullying Institute: http://www.workplacebullying.org

References

Abe, K., & Henly, S. J. (2010). Bullying (ijime) among Japanese hospital nurses: Modeling responses to the revised negative acts questionnaire. *Nursing Research*, *59*(2), 110–118. doi:10.1097/NNR.0b013e3181d1a709

American Association of Colleges of Nursing. (2008). *The essentials of baccalaureate education for professional nursing practice*. Washington, DC: Author.

American Nurses Association. (2015a). *American nurses' association position statement on Incivility, bullying and workplace violence*. Retrieved from http://www.nursingworld.org/positionstatements

American Nurses Association. (2015b). *Code of ethics for nurses with interpretive statements*. Silver Spring, MD: Author.

Apker, J., Propp, K. M., & Ford, W. S. (2009). Investigating the effect of nurse-team communication on turnover: Relationships among communication processes, identification and intent to leave. *Health Communication*, *24*(2), 106–114.

Barriball, K. L., & White, A. E. (1999). Exploring variables underlying non-response in a survey of nurses and nurses' aides in practice. *Journal of Advanced Nursing*, *29*(4), 894–904.

Bartlett, J. E., & Bartlett, M. E. (2011). Workplace bullying: An integrative review. *Advances in Developing Human Resources*, *13*(1), 69–84. doi:10.1177/1523422311410651

Beckmann, C. A. (2012). Faculty perception of bullying in schools of nursing. *Journal of Professional Nursing*, *29*(5), 287–294. doi:10/1016/j.profnurs.2012.05.012

Borhani, F., Tayebeh, J., Abbaszadeh, A., & Haghdoost, A. (2013). Nurses' perception of ethical climate and organizational commitment. *Nursing Ethics*, *21*(3), 278–288. doi:10.1177/0969733013493215

Brewer, C. S., Kovner, C. T., Green, W., Tukov-Shusher, M., & Djukic, M. (2012). Predictors of actual turnover in a national sample of newly licensed registered nurses employed in hospitals. *Journal of Advanced Nursing*, *68*(3), 521–538.

Burke, C., Grobman, W., & Miller, D. (2013). Interdisciplinary collaboration to maintain a culture of safety in a labor and delivery setting. *Journal of Perinatal Neonatal Nursing*, *27*(2), 113–123. doi:10.1097.JPH.0b013e31828cbb2a

Carayon, P., & Gurses, A. P. (2008). Nursing workload and patient safety: A human factors engineering perspective. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses* (pp. 1–14). Rockville, MD: Agency for Healthcare Research and Quality.

Chang, W. A., Wang, Y., & Huang, T. (2013). Work design-related antecedents of turnover intention: A

multilevel approach. *Human Resource Management*, *52*(1), 1–26.

Chang, W. Y., Ma, J. C., Chiu, H. T., Lin, K. C., & Lee, P. H. (2009). Job satisfaction and perceptions of quality of patient care, collaboration and teamwork in acute care hospitals. *Journal of Advanced Nursing*, *65*(9), 1946–1955. doi:10.1111/j.1365-2648.2009.05085.x

Clark, C. M. (2009). Faculty field guide for promoting student civility. *Nurse Educator*, *34*(5), 194–197.

Clark, C. M., Landrum, E. R., & Nguyen, D. T. (2013). Development and description of the organizational civility scale (OCS). *Journal of Theory Construction & Testing*, *17*(1), 11–17.

Commission on Accreditation for Respiratory Care. (2015). *Accreditation standards for the profession of respiratory care*. Bedford, TX: Author.

Coomber, B., & Barriball, K. L. (2007). Impact of job satisfaction components on intent to leave and turnover for hospital-based nurses: A review of the research literature. *International Journal of Nursing Studies*, *44*(2), 297–314.

Cortina, L. M., Magley, V. J., Williams, J. H., & Langhout, R. D. (2001). Incivility in the workplace: Incidence and impact. *Journal of Occupational Health Psychology*, *6*, 64–80.

DeKeyser, F., Levy, H., Arad, D., Bennaroch, K., Kolpak, O., Drori, Y., (Raanan, O. (2015). Bullying and its prevention among intensive care nurses. *Journal of Nursing Scholarship*, *47*(6), 505–511. doi:10.1111/jnu.12167

Dellasega, C. (2011). *When nurses hurt nurses: Recognizing and overcoming the cycle of nurse bullying*. Indianapolis, IN: Sigma Theta Tau International.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail and mixed mode surveys: The tailored design method* (3rd ed.). Hoboken, NJ: Wiley & Sons.

Einarsen, S., Hoel, H., & Notelaers, G. (2009). Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the Negative Acts Questionnaire-Revised. *Work & Stress*, *23*(1), 24–44. doi:10.1080/02678370902815673

Etienne, E. (2014). Exploring workplace bullying in nursing. *Workplace Health & Safety*, *62*, 6–11. doi:10.3928/21650799-20131220-02

Gregory, D. M., Way, C. Y., LeFort, S., Barrett, B. J., & Parfrey, P. S. (2002). Predictors of registered nurses' organizational commitment and intent to stay. *Health Care Management Review*, *32*(2), 119–127. doi:10.1097/01.HMR.0000267788.79190.f4

Guidroz, A. M., Burnfield-Geimer, J. L., Clark, O., Sxhwetschenau, H. M., & Jex, S. M. (2010). The Nursing Incivility Scale: Development and validation of an occupation-specific measure. *Journal of Nursing Measurement*, *18*(3), 176–200.

Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, *49*, 305–325.

Havens, D. S., Vessey, J., Gittell, J. H., & Lin, W. T. (2010). Relational coordination among nurses and other providers: Impact on the quality of patient care. *Journal of Nursing Management*, *18*, 926–937. doi:10.1111/j.1365-2834.2010.01138.x

Healthy Workplace Bill. (2014). *History of the U.S. Legislative Campaign*. Retrieved from http://www.healthyworkplacebill.org/about.php

Hogh, A., Hansen, A. M., Mikkelsen, E. G., & Persson, R. (2012). Exposure to negative acts at work, psychological stress reactions and physiological stress response. *Journal of Psychometric Research*, *73*(1), 47–52. doi:10.1016/j.jpsychores.2012.04.004

The Joint Commission. (2008). *Behaviors that undermine a culture of safety*. Retrieved from https://www.jointcommission.org/assets/1/18/SEA_40.PDF

Joint Review Committee on Education in Radiologic Technology. (2014a). *Standards for an accredited education program*. Retrieved from https://www.jrcert.org/programs-faculty/jrcert-standards/

Joint Review Committee on Education in Radiologic Technology. (2014b). *Standards for an accredited education program*. Chicago, IL: Author.

Kalisch, B. J., Lee, H., & Rochman, M. (2010). Nursing staff teamwork and job satisfaction. *Journal of Nursing Management*, *18*, 938–947. doi:10.111/j.1365-2834.2010.01153.x

Kanter, R. M. (1993). *Men and women of the corporation* (2nd ed.). New York, NY: Basic Books.

KPMG Healthcare Pharmaceutical Institute. (2011). *KPMG's 2011 U.S. hospital nursing labor costs study*. Retrieved from http://www.kpmginstitutes.com/healthcare-life-sciences-institute/insights/2011/pdf/us-nursing-labor-costs-study2011.pdf?utm_source=page&utm_medium=/healthcare-life-sciences-institute/insights/2011/us-nursing-labor-costsstudy2011.aspx&utm_campaign=download

Laschinger, H. K. S., Finegan, J. E., & Wilk, P. (2009). Context matters: The impact of unit leadership and empowerment on nurses' organizational commitment. *Journal of Nursing Administration*, *39*(5), 228–235.

Lee, Y. J., Bernstein, K., Lee, M., & Nokes, K. M. (2014). Bullying in the nursing workplace: Applying evidence using a conceptual framework. *Nursing Economics*, *32*(5), 255–267.

McCaffrey, R., Hayes, R. M., Cassell, A., Miller-Reyes, S., Donaldson, A., & Ferrell, C. (2012). The effect of an educational programme on attitudes of nurses and medical residents towards the benefits of positive communication and collaboration. *Journal of Advanced Nursing*, *68*(2), 293–301. doi:10.1111/j.1365-2648.2011.05736.x

Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension*, *21*(5), 45–50.

Nam, W., Kim, J. W., Kim, Y. K., Koo, J. W., & Park, C. Y. (2010). The reliability and validity of the negative acts

questionnaire-revised (NAQ-R) for nurses for the assessment of workplace bullying. *Korean Journal of Environmental Medicine*, *22*(2), 129–139.

Namie, G. (2003). Workplace bullying. Escalated incivility. *Ivey Business Journal, November/December*, 1–6.

Notelaers, G., & Einarsen, S. (2013). The world turns at 33 and 45: Defining simple cutoff scores for the Negative Acts Questionnaire-Revised in a representative sample. *European Journal of Work and Organizational Psychology*, *22*(6), 670–682. doi:10/1080/1359432X.2012.600558

O'Farrell, B., & Collins, F. (2005). Measuring workplace bullying in Australia: Validation of the negative acts questionnaire revised in an Australian academic population. *Australian Journal of Psychology*, *57*, 237–238.

Ortega, A., Christensen, K. B., Hogh, A., Rugulies, R., & Borg, V. (2011). One-year prospective study on the effect of workplace bullying on long-term sickness absence. *Journal of Nursing Management*, *19*, 752–759. doi:10.1111/j.1365-2834.2010.01179.x

Pintea, S., & Moldovan, R. (2009). The receiver-operating characteristic (ROC) analysis: Fundamentals and applications in clinical psychology. *Journal of Cognitive and Behavioral Psychotherapies*, *9*, 46–66.

Plonien, C. (2016). Bullying in the workplace: A leadership perspective. *AORN Journal*, *103*(1), 107–110. doi:10.1016/j.aorn.2015.11.014

Porter, S. R., & Whitcomb, M. E. (2003). The impact of lottery incentives on student survey response rates. *Research in Higher Education*, *44*(4), 389–406.

Price, J. L. (2000). The development of a causal model of voluntary turnover. In P. W. Hom & R. W. Griffeth (Eds.), *Innovative theory and empirical research on employee turnover* (pp. 3–32). Greenwich, CT: Information Age Publishing.

Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, *24*(3), 543–565.

Roche, M., Diers, D., Duffield, C., & Catling-Paull, C. (2010). Violence towards nurses, the work environment and patient outcomes. *Journal of Nursing Scholarship*, *42*(1), 13–22. doi:10.1111/j.1547-5069.2009.01321.x

Rosenstein, A. H., & O'Daniel, M. (2006). Impact and implications of disruptive behavior in the perioperative arena. *Journal of the American College of Surgeons*, *203*, 96–105. doi:10.1016/j.jamcollsurg.2006.03.027

Sawatzky, J. V., & Enns, C. L. (2012). Exploring key predictors of retention in emergency nurses. *Journal of Nursing Management*, *20*, 696–707.

Sheridan-Leos, N. (2008). Understanding lateral violence in nursing. *Clinical Journal of Oncology Nursing*, *12*(3), 399–403. doi:10.1188/08.CJON.399–403

Simons, S. R., Stark, R. B., & DeMarco, R. F. (2011). A new four-item instrument to measure workplace bullying. *Research in Nursing and Health*, *34*(2), 132–140. doi:10.1002/nur.20422

Tsuno, K. (2010). Measuring workplace bullying: Reliability and validity of the Japanese version of the Negative Acts Questionnaire. *Journal of Occupational Health*, *52*(4), 216–226. doi:10.1539/joh.L10036

van der Heijden, B., van Dam, K., & Hasselhorn, H. M. (2009). Intention to leave nursing: The importance of interpersonal work context, work-home interference, and job satisfaction beyond the effect of occupational commitment. *Career Development International*, *14*(7), 616–635. doi:10.1108/13620430911005681

Vessey, J. A., Demarco, R., & DiFazio, R. (2010). Bullying, harassment, and horizontal violence in the nursing workforce: The state of the science. *Annual Review of Nursing Research*, *28*, 133–157.

Vessey, J. A., Demarco, R. F., Gaffney, D. A., & Budin, W. C. (2009). Bullying of staff registered nurses in the workplace: A preliminary study for developing personal and organizational strategies for the transformation of hostile to healthy workplace environments. *Journal of Professional Nursing*, *25*, 299–306. doi:10.1016/j.profnurs.2009.01.022

Vogelpohl, D. A., Rice, S. K., Edwards, M. E., & Bork, C. E. (2013). New graduate nurses' perception of the workplace: Have they experienced bullying? *Journal of Professional Nursing*, *29*(6), 414–422. doi:10.1016/j.profnurs.2012.10.008

Walker, G. A. (2010). *Common statistical methods for clinical research with SAS examples*. Cary, NC: SAS Institute.

Yamada, D. (2013). Emerging American legal responses to workplace bullying. *Temple Political and Civil Rights Law Review*, *22*(2), 1–45.

Yang, J., Liu, Y., Huang, C., & Zhu L. (2013). Impact of empowerment on professional practice environments and organizational commitment among nurses: A structural equation model. *International Journal of Nursing Practice*, *19*, 44–55. doi:10.1111/ijn.12016

JOURNAL OF NURSING SCHOLARSHIP

WORLD HEALTH

Delphi Survey of Clinical Nursing and Midwifery Research Priorities in the Eastern Mediterranean Region

Carolyn Sun, PhD, ANP-BC, RN[1], Jennifer Dohrn, DNP, CNM, FAAN[2], Arwa Oweis, PhD[3], Dr. Huda Abu-Saad Huijer, RN, PhD, FEANS, FAAN[4], Fathieh Abu-Moghli, PhD[5], Hania Dawani, RN, DNSc, MPH[6], Cheherezade Ghazi, DrPH, MSc, MPH[7], & Elaine Larson, RN, PhD, FAAN, CIC[8]

1 *Alpha Zeta,* Nurse Scientist, Columbia University School of Nursing, New York, NY, USA
2 Assistant Professor of Nursing, Columbia University School of Nursing, New York, NY, USA
3 Department of Maternal and Child Nursing-Faculty member, Department of Midwifery-Faculty member, Jordan University of Science and Technology, and Regional Adviser for Nursing and Midwifery and Allied Health Personnel, World Health Organization, Irbid, Jordan
4 *Chi Iota,* Professor of Nursing Science, Director Hariri School of Nursing, American University of Beirut, Beirut, Lebanon
5 Dean/Faculty of Nursing, The University of Jordan, Jubeiha, Jordan
6 Nursing Advisor, Global Nursing and Midwifery Clinical Research Development Initiative
7 Dean Faculty of Nursing, Badr University and Member of the Nursing Committee at the Higher council of Universities, Member of the Advisory Committee for Nursing—WHO, Cairo, Egypt
8 *Alpha Zeta,* Anna C. Maxwell Professor of Nursing Research, Associate Dean for Nursing Research School of Nursing, Professor of Epidemiology, Editor, *American Journal of Infection Control*; Columbia University, Mailman School of Public Health, Columbia University, New York, NY, USA

Key words
Advanced nursing practice, evidence-based practice, global health, nurse-midwifery, patient outcomes

Correspondence
Dr. Carolyn Sun, 617 West 168th Street, New York, NY. E-mail: cjs2200@cumc.columbia.edu

Accepted December 5, 2016

doi: 10.1111/jnu.12280

Abstract

Purpose: As the shortage of nurses and midwives is expected to worsen in the Eastern Mediterranean region concomitantly with a growing focus on achievement of universal health coverage, nurses and midwives are expected to fill major gaps in health care. Hence, the need for a solid evidence base for nursing practice and a clear direction for clinical nursing research are paramount. Therefore, a Delphi survey was conducted to determine clinical (research focused on patient outcomes) nursing and midwifery priorities for research within this region.

Design: A Delphi survey, using iterative rounds of an online survey of regional clinical nursing and midwifery research experts, was conducted between January and April 2016.

Methods: Consensus was determined by percentage agreement on level of priority for topics as determined by participants. Additionally, results were compared between countries within the region by income and mortality levels using Kendall's tau.

Findings: Critical research topics were focused on public/community/primary care as well as emergency preparedness for disasters, and these priorities are well aligned with gaps in the literature for this region. There were statistically significant differences between priority level and country mortality group for geriatrics, self-management of disease, and sexually transmitted infections.

Conclusions: Critical research priorities should focus on population-based health topics. Between-country differences should be analyzed further. A clinical research database for the region may help improve research access for nurses and midwives.

Clinical Relevance: Practicing nurses and midwives lack extensive evidence (including culturally relevant evidence) on which to practice. Increasing research in areas identified in this survey may improve patient outcomes and quality of care regionally.

Nurses and midwives are recognized worldwide as healthcare providers who deliver the majority of health care and are essential to improving health outcomes (World Health Organization [WHO], 2013c). As the global demand for scaling up numbers of well-prepared nurses and midwives increases in an effort to achieve the goal of universal health coverage, advanced training and education become critical (WHO, 2016a). Foundational to strengthening the global nursing and midwifery workforce and ensuring high quality care is the need for a solid evidence base (WHO, 2016a). In the midst of a global nursing shortage, the WHO reports that nurses and midwives are essential to strengthen the core of health care globally, and cite building evidence-based nursing and midwifery as part of its conceptual framework (WHO, 2016a).

The shortage of nurses and midwives is expected to worsen is the Eastern Mediterranean Region (EMRegion; WHO, 2016a), where the state of midwifery and nursing varies from country to country. It is newly emerging in some yet well established in others, and midwifery is not uniformly included as a part of nursing regionally (Alhusaini, Sun, & Larson, 2016). As with other regions around the world, nursing and midwifery are changing, requiring increasingly technical skills with advanced training to meet the healthcare needs of the population (Alinier & Platt, 2014). However, in the EMRegion there are additional burdens of political turmoil, social upheaval, and unprecedented mass emigration and immigration, causing a profound need for insight into the healthcare needs of refugee populations. Although these numbers are in constant flux, of 4.8 million Syrian refugees, Turkey hosts 2.7 million, Lebanon over 1 million, and Jordan over half a million registered refugees (United Nations High Commissioner for Refugees [UNHCR], 2016), but about 1.4 million refugees in total, increasing Jordan's total population by 20% (Hashemite Kingdom of Jordan Ministry of Planning and International Cooperation, 2016). Similarly, there are more than 4 million displaced Iraqis, and nearly 1 million displaced citizens of South Sudan (UNHCR, 2016). More than 80% (2.3 million) of the population of Yemen has been displaced (UNHCR, 2016). Likewise, Somalia has suffered ongoing conflict for decades, and currently has nearly 1 million refugees registered in neighboring countries (UNHCR, 2016). Many of these countries are struggling to address the healthcare situation for the massive increase in population caused by these shifts in addition to their own population needs (Hashemite Kingdom of Jordan Ministry of Planning and International Cooperation, 2016). One example is Djibouti, which is already suffering from malnutrition rates approaching 20% as well as being host to thousands of refugees from both Syria and Somalia (United Nations Office for the Coordination of Humanitarian Affairs, 2016). Understanding the population health needs and appropriate nursing and midwifery interventions for refugee communities is crucial; however, a recent scoping review of clinical nursing and midwifery research within the region revealed only six publications on war or conflicts and four on culturally relevant care over a 15 year span (2000–2015; Alhusaini et al., 2016). This being one example of the essential need for culturally relevant and population-based assessment research to provide a firm foundation for nurses and midwives practicing in the EMRegion, a current assessment of the clinical nursing and midwifery research needs of the EMRegion is both timely and essential.

Over the next 5 years, strengthening nursing and midwifery within the EMRegion is one of five strategic priorities of the WHO (2016c). Regional and country-specific research is seen as a critical step (WHO, 2016c), and identification of priorities is imperative to assure that research conducted is efficient and relevant (Chalmers et al., 2014). There have been recent efforts to achieve consensus for nursing priorities within the region, such as a regional meeting held by the Global Advisory Panel on the Future of Nursing in March 2016 with a focus on leadership, policy/regulation, education, and workforce; there is little evidence of such a pursuit for midwifery and such attempts are difficult amidst the social and political turmoil within the region. There remains a gap in clear direction and consensus for clinical research focused on patient outcomes (Adams, 2016). Therefore, in partnership with the University of Jordan, Jordan University of Science and Technology, American University of Beirut, Badr University in Cairo, King Abdulaziz University in Saudi Arabia, and the Jordanian Nursing Council, as well as with insight from the WHO Eastern Mediterranean Regional Office, we undertook an assessment of clinical nursing and midwifery research needs using Delphi survey methodology to identify and engage clinical nursing and midwifery research experts in the region.

Methods

Design

A Delphi survey uses iterative rounds to determine consensus on a particular topic by asking experts to give their opinion, returning the results to the participants, and continuing until consensus is reached. While there are no set number of rounds, consensus is commonly reached in two to three rounds (Hasson, Keeney, & McKenna, 2000). This technique allows for sampling from a broad geographic region, and some suggest that electronic surveys may improve results by allowing for

anonymity, eliminating the potential for persuasive leaders to influence outcomes (Hasson et al., 2000). The Columbia University Medical Center Institutional Review Board approved this study.

Eastern Mediterranean Region

Twenty-three countries in the EMRegion as defined by the WHO were included: Afghanistan, Bahrain, Cyprus, Djibouti, Egypt, Iran (Islamic Republic of), Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, The Sultanate of Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic (Syria), Tunisia, United Arab Emirates, Yemen, and The State of Palestine (**Figure 1**; WHO, 2016b).

Sample

An initial list of regional clinical nursing and midwifery research experts was developed with the help of collaborators within the region using local contacts and searches of indexed and grey literature. Whereas many facets of advanced nursing such as nurse scientists, nurse anesthetists, and so on are regionally regarded as aspects of the nursing profession, midwifery is not consistently considered part of nursing within the region. Therefore, where possible, we also selected midwives who are nurses as those who would be considered experts on nursing- and midwifery-related topics. Our regional core collaborators (n = 7) were nurse and midwifery leaders engaged in a larger project within the region, all of whom were professional nurses or midwives with doctoral degrees who held leadership roles (e.g., dean of a school of nursing or high-ranking official within a ministry of health) and conducted research or directed those conducting research. All of these leaders lived in one of the EMRegion countries.

As described in the classic work by Benner, it may be difficult to delineate what makes an "expert" nurse. However, as she also points out, there is the somewhat untenable yet reliable method of asking others to identify the expert (Benner, 1984). Therefore, we relied heavily on the referral of colleagues for regional experts (heads of nursing, university deans, the WHO regional office, etc.) and also used the following criteria for those included in the Delphi survey: (a) a professional nurse, (b) a bachelor's degree or higher in nursing, (c) published clinical research, (d) affiliated with a school of nursing or midwifery with at least a master's level nursing or midwifery program, and (e) resides within the region. Contacts were obtained from a conference held for deans of Middle Eastern nursing schools in the spring of 2015, searches for regional publications and university nursing researchers, and verified by core collaborators and screening questions within the first round (R1) of the Delphi Survey.

To attain the recommended number of participants (15–60) as well as to assure representation across the EMRegion (Hasson et al., 2000), collaborators were asked to select their top four clinical nursing research experts as well as four alternate names per country (in the event of nonparticipation). We oversampled to ensure adequate sample size after nonresponse and dropout through rounds. To reduce bias of those with similar opinions, and to encourage broader perspectives, for those with many experts in a single institution, we asked for only one person per institution.

Survey Development and Administration

Rounds of the Delphi survey were developed using an electronic software package (Qualtrics, https://www.qualtrics.com) by one researcher and tested by a seven-member research team. Two incentives were offered to those who completed all rounds of the survey: a drawing for one participant to receive (a) guaranteed participation and travel support to a future Research Summit in Amman, Jordan, and a second participant to receive (b) a 16-GB iPad mini Wi-Fi. The electronic, online survey was sent via email in early February 2016 initially to 107 participants in 20 countries. For every survey in each round, reminder emails were sent at 3 days and again at 7 days, and the survey was closed when no responses were collected within a week after the final reminder. If there were fewer than four respondents per country following these reminders, the survey was sent to the backup participants. The survey was closed when there were no responses 1 week after the final reminder. We determined a priori that consensus would be reached when each topic had more than 50% of the participants in agreement regarding priority ranking, or after three rounds, as other studies have suggested that additional movement toward consensus is unlikely after three rounds (Hasson et al., 2000). The results of each round were reviewed to determine invitees for subsequent rounds.

The survey was initially distributed to nursing and midwifery experts in 15 countries; 1 week after the final reminder for the first tier of the survey (the top four candidates for each country), 17 additional contacts were sent the survey link. Through the snowball method (references from those who participated in the survey), three additional contacts were obtained and were also sent the survey link; these were references for contacts within countries in which we had been unable to obtain a participant (see **Figure 1**).

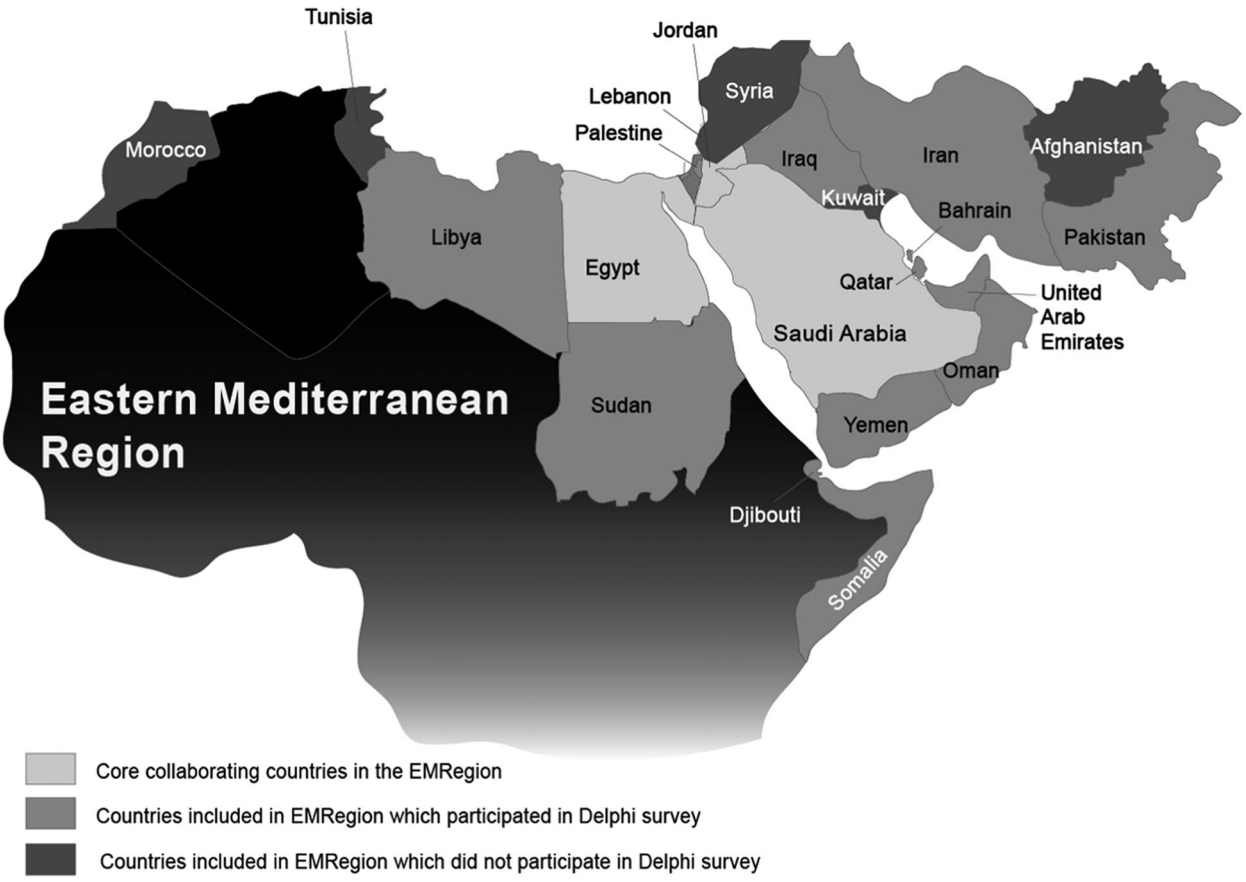

Figure 1. Map of Eastern Mediterranean region and included countries.

Round 1. The survey included an informed consent page (those who did not consent were not directed to the survey), demographic information (education, nursing or midwifery status, employment, geographic location, and recent publications), and one open-ended question: "Please list up to five critical clinical nursing or midwifery research priorities in your country." The term "clinical" was defined as those research topics focused on patient outcomes (e.g., reduction in symptoms, patient satisfaction, therapeutic interventions, refugee health, or emergency preparedness for disasters). Respondents were also asked to identify potential experts in countries with few contacts, in an effort to ensure that all countries within the region were represented. Responses of R1 were reviewed to determine participants for Round 2 (R2); those who did not meet the inclusion criteria (based on the demographic information provided in R1) or did not complete the entire survey were excluded. Two researchers collated responses regarding priority research topics, and the survey for R2 was developed. Topics were reviewed and similar topics were grouped together under major topics; more specific, minor topics were presented as subcategories of major topics. These minor topics were decided collectively using a constant comparative, iterative process between two researchers.

Round 2. This new round of the survey was also tested by the research team and then sent to all participants who had completed R1 and met the inclusion criteria, as well as additional contacts recommended by core collaborators. Participants were asked to rank the research topics as being a "critical," "important," "moderately important," or "low" clinical nursing and midwifery research priority. The results were imported into SPSS software (IBM Corp., Armonk, NY, USA) and analyzed for consensus. As we chose to include new contacts in R2, we allowed them an open-ended question to add critical research priorities that had not been identified (Hsu & Sandford, 2007). Because there was no clear consensus on the priority rankings of research topics (>50% of participant agreement on priority ranking for each topic), a third round (R3) was required.

Round 3. Results from R2 were used to create R3 of the survey, which asked participants to rate the clinical nursing and midwifery research topics from R1 and R2 in the same way as had been done in R2. Additionally, R3 presented the results of R2 in terms of the percentage of participants who ranked the topic "critical," "important," and so on. The final priority ranking was determined using the priority level selected by the highest percentage of participants in R3. For those topics with a tie for priority ranking (e.g., 50% of participants ranked a topic as critical and 50% ranked it as important), we used the ranking selected by the highest percentage of participants in R2.

Data Analysis

Results were imported into and analyzed using IBM SPSS Statistics for Macintosh software (version 23.0). Descriptive statistics were run to determine priority ranking using frequencies and proportions. As described earlier, the final rankings were determined by the results of R3, with a "critical" ranking being given to those topics ranked as critical by the majority of participants, "important" to those ranked by the majority of participants as important, and so on. Mean and median were not selected as consensus criteria, as these can be misleading in determining group opinion (Hasson et al., 2000).

High-Income Countries Versus Low- and Middle-Income Countries

To explore differences between countries within a region with diverse income levels, results were also analyzed in terms of national income groupings from the WHO (2009) and United Nations (UN, 2016). The WHO categorizes countries as high income if they have a gross national income (GNI) of >US$10,000 in 2004, or low and middle income for those with less. Palestine was not included in the WHO data; therefore, we categorized it based on the GNI using the WHO criteria (UN, 2016). Where there were differences in rankings from the Delphi survey responses (critical, important, moderate, or low priority) between a high-income country (HIC) and a low- and middle-income country (LMIC), we used Kendall's tau to compare whether the differences were statistically significant (Clason & Dormody, 1994). In cases where the rankings agreed between HIC and LMIC, we did not test for differences.

Priority Ranking by Mortality Rate

Likewise, in a region with heterogeneous levels of mortality between countries, an analysis of differences between similarly grouped countries was conducted. Mortality levels are reported by region as described by the WHO, using population estimates by quintile; the EMRegion has levels B (low child, low adult mortality [LCLAM]; 2nd and 3rd quintile) and D (high child, high adult mortality [HCHAM]; 4th and 5th quintile; Murray, Lopez, Mathers, & Stein, 2001; WHO, 2016b). Palestine was not included in these subregions, and we were unable to find consistent data to determine its category (Mahmoud, 2013). Therefore, we did not include Palestine in these analyses. A Kendall's tau-b correlation was used to determine the relationship between priority rankings and country mortality level.

Results

In total, 107 participants from 16 countries were invited to participate. Eleven emails were nonfunctional, and 42 responses (47.3% response rate) from 16 countries (80% of invited countries) were received (**Table 1**). However, because many of the contacts were retrieved through searches of the literature, several were unverified and only 55 of the emails were opened, resulting in a response rate of 76% for those surveys that actually reached contacts (**Figure 2**). Thirty-one major topics and 17 subtopics resulted from R1.

R2 was sent via email to the 38 participants who had completed R1 as well as 7 additional suggested contacts; the same 38 participants responded (84.4% participation rate) and these participants were invited to participate in R3. In addition to the 31 main topics suggested in R1, 10 additional topics were suggested as critical nursing or midwifery research priorities, as well as an additional 9 subtopics, resulting in a total of 41 main topics and 26 subtopics returned to participants in R3. In R3, all 38 invited participants responded (100% response rate). These same participants completed all three rounds. The resultant priority ranking of clinical research topics is presented in **Table 2**.

Priority Rankings

Critical priorities. Chronic illness (which can include many of the conditions listed elsewhere, but here specifically refers to those cases requiring long-term or lifelong intervention), community health/community-based practice, public health, emergency preparedness for disasters, noncommunicable diseases (NCDs; see **Table 2** for a comprehensive list of specific topics participants considered to be NCDs), palliative care, preventative health interventions, health promotion/disease prevention, primary health care, quality assurance/patient safety issues/medical errors, road traffic accidents, self-management of disease, and patient participation in

Table 1. Participation of Countries by Rounds

Country ($n = 20$)	Round 1 participants	Round 2 participants	Round 3 participants	Proportion of result by country (%)
Afghanistan[a,d]	0	0	0	0
Bahrain[c,b]	3	2	2	5.1
Egypt[a,d]	4	4	4	10.3
Iran (Islamic Republic of)[a,b]	1	1	1	2.6
Iraq[a,b]	2	2	1	5.1
Jordan[a,b]	6	8	8	20.5
Kuwait[b,c]	0	0	0	0
Lebanon[a,b]	5	5	5	12.8
Libyan Arab Jamahiriya[a,b]	1	1	1	2.6
Morocco[a,d]	0	0	0	0
Pakistan[a,d]	1	1	1	2.6
Palestine[a,d]	4	4	4	10.3
Qatar[b,c]	1	1	1	2.6
Saudi Arabia[b,c]	4	4	4	10.3
Sudan[a,d]	1	0	0	0
Sultanate of Oman[a,b]	4	3	3	7.7
Syrian Arab Republic[a,b]	0	0	0	0
Tunisia[b,c]	1	1	1	2.6
United Arab Emirates[b,c]	2	1	1	2.6
Yemen[a,d]	1	1	1	2.6
Total	42	39	38	100.0
Total number of countries	16	15	15	

[a]Low- and middle-income countries.
[b]WHO subregion: low child, low adult mortality.
[c]High-income countries.
[d]WHO subregion: high child, high adult mortality.

care were ranked as critical priorities. Infection prevention and infection control (listed as a subtopic of environmental monitoring) were also ranked as a critical clinical research priority. Women's cancer was a critical subcategory of women's health.

Important priorities. Adolescent health, communicable disease, critical care, elder care/geriatrics, emergency department nursing, end-of-life issues, environmental monitoring (personal protective equipment, hand washing, waste disposal), health informatics, maternal–child health (MCH) and women's health (as general categories), pain management, patient adherence to care, patient health rights, multidisciplinary collaboration in relation to patient care and patient outcomes, nutrition, patient involvement in discharge planning, patient satisfaction, pediatrics, refugee health, spirituality/holistic care (including therapeutic nursing modalities/interventions), triaging, and school health were ranked as important clinical research priorities. Subcategories of MCH/women's health that were also ranked as important priorities were neonates/newborn care, care of the disabled, women's health, other MCH, infertility, and women's lifestyle/health behaviors. While preventative health interventions/health promotion/disease prevention was ranked overall as a critical priority, the subcategories of obesity in children and health service development were ranked as important.

Moderate priorities. Mobile technology interventions, genetics, occupational health, and sexually transmitted infections (STIs) were considered moderately important research priorities. Menopause was also ranked as a moderately important priority.

Priority rankings by country income. There were differences in rankings between the majority of participants between HICs ($n = 31$) and LMICs ($n = 8$) for 18 topics, although they were not statistically significant (see **Table 2**).

Priority ranking by mortality rate. Seventeen topics had differing proportions of priority rankings between LCLAM ($n = 27$) and HCHAM ($n = 8$) countries (Palestine was not included in this analysis; $n = 4$); 14 of these were nonstatistically significant (see **Table 2**). Topics that were statistically different between priority levels HCHAM and LCLAM were elder care/geriatrics,

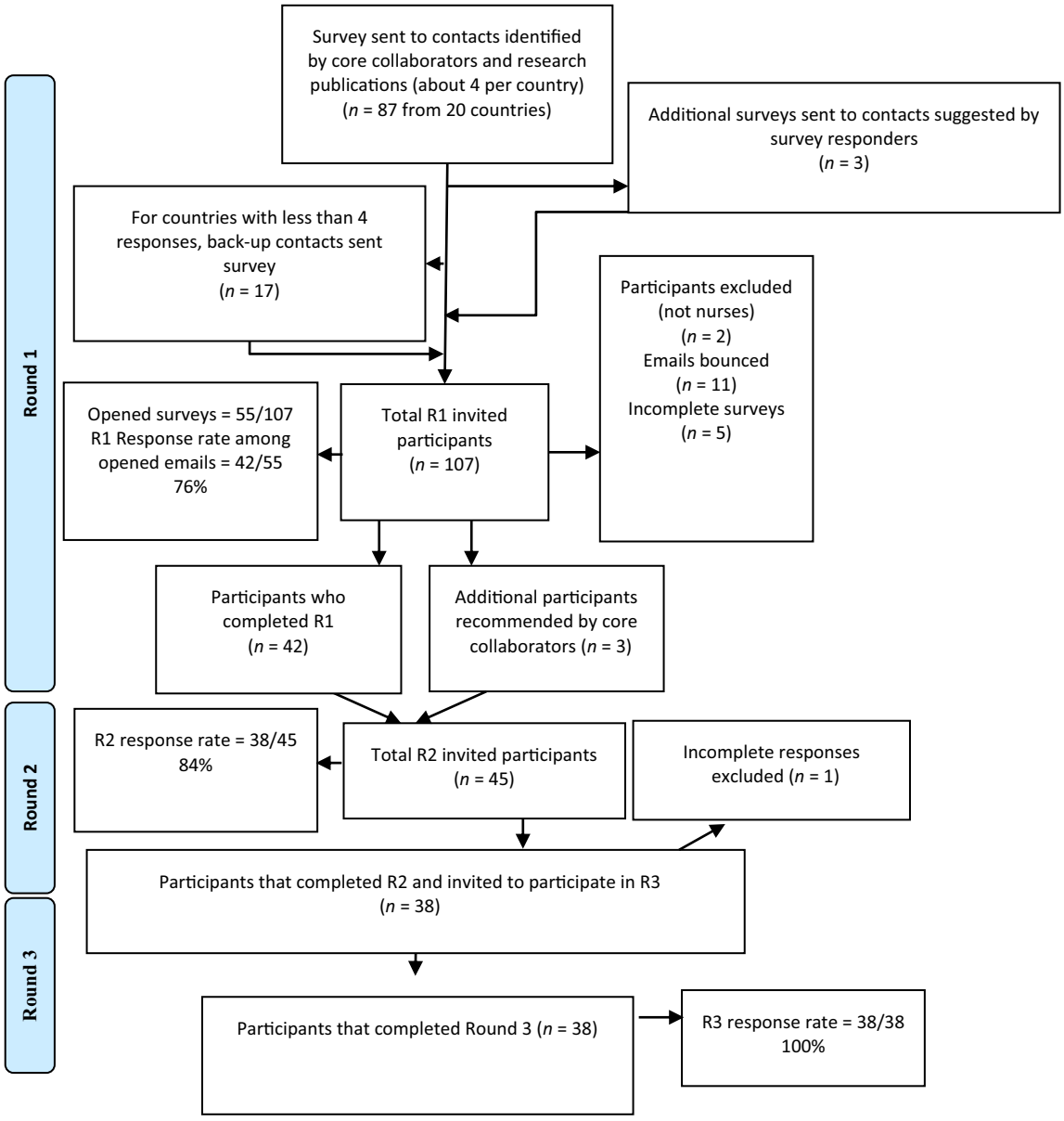

Figure 2. Survey rounds.

self-management of disease/patient participation in care, and STIs (see **Table 2**).

Discussion

Critical Priorities

Chronic Illness, Primary Health Care, Community Health, Community-Based Practice, Public Health, Preventative Health Interventions, and Health Promotion/Disease Prevention. Primary health– and community-based care–related topics were commonly ranked as critical topics, rather than those addressing hospital-based or more specialized populations. Although listed as separate topics, all are highly related; each was rated as critically important, emphasizing the importance of addressing these population-based health issues and the need for decentralized, community-based models of care. Nurses' historical and current role in implementing effective interventions for community health and health promotion and disease prevention has been recognized by the WHO as fundamental in achieving universal health coverage (WHO, 2016a). Nursing and midwifery require specific, culturally relevant interventions that can

Table 2. Results of Delphi Survey ($n = 38$ Expert Respondents)

Critical priorities	
Topic	Participants Ranked as Critical (%)
Chronic illness[a]	74.4
Emergency preparedness for disasters	71.8
Environmental monitoring (personal protective equipment, hand washing, waste disposal), etc.[b]	
Infection prevention/infection control[b]	68.8
Preventative health interventions/health promotion/disease prevention	64.1
Culturally competent approaches to health promotion and care	75.0
Community programs linked to clinical services to ensure the management of all chronic disease (obesity prevention, etc., and epidemiology and surveillance)	75.0
Primary health care	66.7
Quality assurance/patient safety issues/medical errors	66.7
NCDs[a]	59.0
Diabetes	95.7
Hypertension	91.3
Cardiovascular disease (including coronary heart disease, stroke, and self-care management)[a]	87.0
Cancer	82.6
Breast cancer	78.3
Mental health	78.3
All NCD risk factors (human health behaviors, nutrition)	65.2
Kidney disease	60.9
Obesity/bariatrics[a,b]	52.2
Women's health	
Women's cancer	57.1
Community health/community-based practice/public health[b]	56.4
Road traffic accidents	56.4
Self-management of disease, patient participation in care[b,c]	46.2
Palliative care[a,b]	43.6
Important priorities	
Topic	Participants Ranked as Important (%)
Preventative health interventions/health promotion/disease prevention	
Obesity in children	50.0
Health service development	75.0
Adolescent health	84.6
Communicable disease	64.1
Pediatrics	61.5
NCDs	59.0
Symptom management[b]	47.8
Respiratory diseases[b]	65.2
MCH and women's health[b]	56.4
Neonates/newborn care[a]	64.3
Care of the disabled	56.4
Women's health[a]	50.0
Other MCH	42.9
Infertility	64.3
Women's lifestyle/health behaviors	57.1
Other women's health issue not mentioned elsewhere	50.0
Health informatics	51.3
Patient involvement in discharge planning	59.0
Patient satisfaction	59.0
Refugee health	48.7
Elder care/geriatrics[c]	48.7

Continued

Table 2. *Continued*

Important priorities	
Topic	Participants Ranked as Important (%)
End-of-life issues	48.7
Critical care[a]	46.2
Emergency department nursing[a]	46.2
Nutrition	46.2
Spirituality/holistic care (including therapeutic nursing modalities/interventions)[a]	46.2
School health[a,b]	46.2
Environmental monitoring (personal protective equipment, hand washing, waste disposal), etc.	43.6
Other environmental monitoring topics (not listed elsewhere)	56.3
Triaging	43.6
Pain management[b]	41.0
Multidisciplinary collaboration in relation to patient care and patient outcomes[a,b]	38.5
Patient adherence to care[a,b]	38.5[d]
Patient health rights[b]	30.8
Moderately important priorities	
Topic	*Participants Ranked as Moderately Important (%)*
Women's health[b]	
Menopause[a]	35.7
Occupational health[b]	48.7
Sexually transmitted infections[b,c]	48.7
Mobile technology interventions	46.2
Genetics	43.6

Note. Topics without a notation had no difference in rankings between LMIC/HIC or LCLAM or HCHAM countries. HCHAM = high child, high adult mortality; HIC = high-income countries; LCLAM = low child, low adult mortality; LMIC = low- and middle-income countries; MCH = maternal–child health; NCD = noncommunicable disease.

[a]Although ranked differently between LCLAM and HCHAM countries, there were no statistically significant differences.

[b]Although ranked differently between LMIC and HIC, there were no statistically significant differences.

[c]Statistically significant differences in rankings between LCLAM and HCHAM countries.

[d]In Round 3, this topic was ranked by an equal number of participants as critical and important (38.5%). In Round 2, 36.8% of participants (majority) ranked this topic as important and 34.2% (the next largest number of participants) ranked it as moderately important. Therefore, we included this with "Important Priorities."

be implemented in the regional and local setting; thus, country- and region-specific research is a critical priority as interventions developed in other countries and regions may not be generalizable to this region (Rao, Donaldson, & Doiron, 2015).

Emergency preparedness for disasters. Not surprisingly, clinical research regarding emergency preparedness for disasters and complex humanitarian crises was identified as a critical need in this region that continues to experience political conflict, civil unrest, terrorism, and natural and biologic disasters (Al-Mulali & Ozturk, 2015; Brauch, 2003). Such preparedness to respond can reduce the severity of outbreaks and loss of life (WHO, 2006). Development of specific midwifery and nursing interventions for such scenarios is required for the acute, mid-range, and long term, as well as monitoring indicators (Brauch, 2003).

Noncommunicable diseases. With rising NCDs worldwide, accounting for almost 70% of deaths, NCDs are the subject of the WHO's Global Action Plan: to reduce premature mortality from NCDs by 25% by 2025 (the "25 by 25 goal"; WHO, 2013b). The EMRegion has seen a dramatic increase in NCDs and risk factors for NCDs (Habibzadeh, 2013). Between 1990 and 2010, for example, there was a 44% increase in ischemic heart disease, 35% increase in stroke, 58% increase in major depressive disorder, and 87% increase in diabetes (World Bank Group, 2013). Risks factors have also increased at an alarming rate, including unhealthy diets (64% increase), high blood pressure (59% increase), high total

cholesterol (51% increase), and high body mass index (138% increase; World Bank Group, 2013).

Palliative care. While palliative care has seen advances in other regions, and major advances in some countries within the EMRegion (Abu-Saad Huijer, Saab, & Hajjar, 2016; Abu-Saad Huijer, Sagherian, & Tamim, 2013), much of the region has lagged behind for many reasons, including lack of governmental support, lack of medications commonly used in palliative care treatments (sometimes because of economic sanctions, regulatory and pricing obstacles, etc.), misunderstandings regarding the terminology, religion, and cultural norms and traditions (Silbermann et al., 2012).

Quality assurance/patient safety issues/ medical errors. Consistent with other studies, respondents identified a need for research in the area of quality of care in the EMRegion (Saleh, Alameddine, Mourad, & Natafgi, 2015). Specifically, there is a dearth of information about clinical practice and quality of care, as well as patient–provider relationships (Saleh et al., 2015).

Road traffic accidents. Road traffic accidents are on the rise in the EMRegion, with a 46% increase in road injuries between 1990 and 2010, and are a major health concern, being the leading cause of death in young men in the region (The World Bank, 2016). The EMRegion has the second highest mortality rate from traffic accidents compared to other WHO regions; HICs in the EMRegion have the highest mortality rates from traffic accidents globally (WHO, 2013a). The WHO cited strengthening the capacity of healthcare workers, including nurses, as a key action to reduce fatalities of traffic accidents (WHO, 2013a).

Self-management of disease and patient participation in care. Many chronic diseases and NCDs may benefit from self-management of disease and patient participation in care (Hibbard & Greene, 2013). Increasing self-management of disease will be essential to improve patient outcomes within resource-scarce areas in the EMRegion (Al Johani, Kendall, & Snider, 2015), and nurses and midwives have demonstrated their effectiveness as strategic partners in this effort (Peimani, Tabatabaei-Malazy, & Pajouhi, 2010). Strategies to improve many aspects of care include improved patient participation in care (Hibbard & Greene, 2013).

Infection prevention and infection control. In addition to infection prevention and control issues experienced worldwide, the EMRegion has issues specific to the region, such as Middle East respiratory syndrome (MERS), which is of concern to the general population and because of its prevalence in healthcare workers (Memish, Zumla, & Assiri, 2013). Furthermore, conflicts and wars in the region have resulted in population migration that has led to major and urgent health issues, including the re-emergence of infectious diseases such as polio and measles (Francis, 2015). Compounding these problems are challenges in primary healthcare strategies that are difficult to track in a migrating or displaced population, such as achieving the WHO goal to eliminate measles; in 2010, nearly 2 million infants in the EMRegion failed to receive the third dose of the diphtheria, pertussis, and tetanus (DPT) vaccine (WHO, 2014).

Women's cancer. Breast cancer is the leading type of cancer in the EMRegion (WHO, 2012). Moreover, the EMRegion has the third highest rate of deaths per case from breast cancer of all WHO regions, suggesting women receive a diagnosis of cancer at a later stage, when treatments are less likely to be successful (WHO, 2012). Increased secondary preventative practices for women's cancers, such as cervical and breast cancer screening, can be cost-effective interventions with a high potential for reduced morbidity and mortality for women in the EMRegion (El Saghir et al., 2007).

Nonresponse

Afghanistan (LMIC, HCHAM), Kuwait (HIC, LCLAM), Morocco (LMIC, HCHAM), and the Syrian Arab Republic (LMIC, LCLAM) did not respond to requests to participate in any of the rounds. This could be a reflection of the high level of political unrest, or a nursing shortage (due not only to lack of trained professionals but also a mass exodus of existing healthcare professionals, and the majority of nurses and midwives nearing retirement age), insufficient numbers of doctorally prepared nurses and midwives to conduct research, or lack of funding for health care and research as in the case of Morocco (Global Health Workforce Alliance, 2010). Further investigation in countries not included in this survey should be considered in the future.

Priority Rankings by Country Income and Mortality Rate. Both HICs and LMICs have similar concerns for research priorities within the region, such as population-based health topics and emergency preparedness for disaster (see **Table S1** for more information, available with the online version of this article). Given the discrepancy in life expectancy within LCLAM and HCHAM countries, the fact that elder care/geriatrics research was a lower priority in HCHAM countries was

expected, lending credence to the statistical analyses and face value of the study. Self-management of disease/patient participation was ranked as a higher priority for LCLAM countries, although both LCLAM and HCHAM countries ranked it as important or critical. Amongst the priorities, STIs were ranked of higher urgency in LCLAM countries than in HCHAM countries. In addition to regional turmoil shifting priorities to other topics, this may also be partially related to the lack of data on the topic, the lack of trained researchers within the EMRegion, or stigma related to STIs within the region (Abu-Raddad et al., 2013).

The purpose of this article was to provide evidence for nurse scientists in order to redirect their research with the ultimate goal of improving the regional evidence base. By providing clear clinical nursing and midwifery research priorities, this evidence will support nurses as they develop research strategies and apply for funding, and could potentially guide policymakers as they allot funding and establish research agendas.

Limitations

This survey was conducted during a period of political fragility within countries in parts of the region. Within this context, difficulties with changing contact information and nonresponse, likely due to limited access because of regional conflicts, made this exceptionally difficult and we were unable to get representation from all countries. For example, several contacts from Syria were obtained but none responded. Furthermore, large differences between countries within the region exist in terms of resources and mortality levels, and although we made efforts to analyze these differences, the results should be contextualized for the region; lack of input from some countries should be considered. Several results from this survey have important implications that will need to be addressed. These results include the lack of consensus on some regional priorities; enhancing research beyond academic settings and closer to care delivery settings with emphasis on primary healthcare settings; development of innovative low-cost research; mentoring and empowerment of researchers; strengthening nursing and midwifery leadership; basic healthcare structures; networking; and tools to facilitate exchange of information and data between nursing and midwifery researchers.

This study aimed to address research gaps and priorities from a high level of nursing and healthcare leadership with the intent that change would be made from a policy or governance level and work its way back to clinicians. While we aspired to include those who, while having leadership roles, also work as practicing nurses or have direct interactions with the clinical nurse, there may remain a gap between what are seen as research priorities for nursing and midwifery by academicians and leaders and those priorities identified by clinicians. Future studies are being planned to address this disparity by conducting focus groups with nurse and midwife clinicians within the EMRegion.

Gaps in the Literature

Comparing the results of this study to a recent scoping review of the region, it is clear that the priorities identified by regional clinical nursing and midwifery experts are closely aligned with gaps in the literature (see **Table S2** for more information, available with the online version of this article). For example, chronic illness, the topic most frequently ranked as a critical priority, appeared only 17 times (8.1%) in all of the clinical nursing and midwifery research found in the review (Alhusaini et al., 2016). Emergency preparedness for disasters only appeared 6 times (2.8%), infection prevention/infection control twice (1.0%), and primary health care 4 times (1.9%; Alhusaini et al., 2016). Contrariwise, the most often covered subjects in the scoping review were women's health ($n = 57$, 27.1%) and maternal–child health ($n = 38$, 18.1%), and these topics did not appear among the critical rankings for the region (Alhusaini et al., 2016). These findings suggest that there is a scarcity of relevant literature available for nurses and midwives on these critical research priorities, amplifying the urgency for research targeted at these topics.

Conclusions and Recommendations

While some discrepancies may exist between LCLAM and HCHAM clinical research priorities in the EMRegion, the majority of priorities are well aligned and focused on population-based clinical nursing and midwifery research such as primary care, community health, and NCDs. The ability to obtain input from countries experiencing unrest is limited and complicated; for these very reasons, it is important that concerns of unrepresented countries are elucidated. Future research should explore strategies to address these needs. Funding for clinical nursing and midwifery research should be consistent with critical priorities identified by experts, according to the most emergent regional needs. In a region with severe complex humanitarian crises, and midwives and nurses conducting research and caring for populations in turmoil, the need to refine the direction of research is even greater. As such, this study provides essential insight into areas most important for focus and funding as identified by clinical nursing and midwifery research experts in the EMRegion.

Findings of this study may be used to inform not only nursing researchers and educators for training, advising, and curriculum development, but also for research centers and other stakeholders to provide guidance on how to address the identified clinical nursing research priority issues at the country level, and to advocate for allocating funding to support research on interventions to improve health care. Findings can also serve to strengthen research capacities and collaborations to initiate knowledge sharing and development activities and to expand the possibility for professional cross-organizational and regional research activities. This could be done through developing and/or supporting the creation of a regional database of nursing researchers and their research, which would summarize what is being done and where. This may in turn increase nurses' interest in future research and encourage them to become more committed to participate in setting and implementing the nursing and midwifery research agenda on relevant clinical topics. Most importantly, as all topics in this study were focused on clinical research as it relates to patient outcomes, the findings can be used to fortify clinical research, in turn strengthening the evidence base and ultimately improving patient outcomes.

Acknowledgments

The authors gratefully acknowledge funding for this project by Columbia University's Presidential Grant for the Global Nursing Research Development Initiative President's Global Innovation Fund as well as assistance from Yu-hui Ferng and our regional core collaborators in various aspects throughout the study.

Clinical Resources

- Resources for Global Health Researchers: https://www.fic.nih.gov/Global/Pages/training-resources.aspx
- World Health Organization Eastern Mediterranean Regional Office: http://www.emro.who.int/index.html

References

Abu-Raddad, L. J., Ghanem, K. G., Feizzadeh, A., Setayesh, H., Calleja, J. M. G. & Riedner, G. (2013). HIV and other sexually transmitted infection research in the Middle East and North Africa: Promising progress?. *Sexually Transmitted Infections*, *89*(Suppl 3), iii1–iii4. doi:10.1136/sextrans-2013-051373

Abu-Saad Huijer, H., Saab, M., & Hajjar, R. (2016). Palliative care for older adults: State of the art in Lebanon. *Lebanese Medical Journal*, *64*(1), 27–32.

Abu-Saad Huijer, H., Sagherian, K., & Tamim, H. (2013). Quality of life and symptom prevalence as reported by children with cancer in Lebanon. *European Journal of Oncology Nursing*, *17*(6), 704–710.

Adams, J. (2016). *Middle Eastern nursing and midwifery leaders identify regional issues during global advisory panel on the future of nursing and midwifery meeting*. Retrieved from http://www.prweb.com/releases/2016/04/prweb13331675.htm

Al Johani, K., Kendall, G., & Snider, P. (2015). Pratiques d'auto-prise en charge chez des patients atteints de diabète de type 2 fréquentant des centres de soins de santé primaires à Médine (Arabie saoudite). (Self-management practices among type 2 diabetes patients attending primary health-care centres in Medina, Saudi Arabia). *Eastern Mediterranean Health Journal*, *21*(9), 621–628.

Al-Mulali, U., & Ozturk, I. (2015). The effect of energy consumption, urbanization, trade openness, industrial output, and the political stability on the environmental degradation in the MENA (Middle East and North African) region. *Energy*, *84*, 382–389.

Alhusaini, M. A., Sun, C., & Larson, E. (2016). Clinical nursing and midwifery research in Middle Eastern and North African countries: A Scoping review. *Journal of Health Specialties*, *4*(4), 238–245.

Alinier, G., & Platt, A. (2014). International overview of high-level simulation education initiatives in relation to critical care. *Nursing in Critical Care*, *19*(1), 42–49. doi:10.1111/nicc.12030

Benner, P. (1984). From novice to expert. *American Journal of Nursing*, *82*, 402–407. Retrieved from http://files.eric.ed.gov/fulltext/ED384695.pdf#page=130

Brauch, H. G. (2003). Urbanization and natural disasters in the Mediterranean: Population growth and climate change in the 21st century. In A. Kreimer, M. Arnold, & A. Carlin (Eds.), *Building safer cities* (pp. 149–164). Washington, DC: The International Bank for Reconstruction and Development/The World Bank.

Chalmers, I., Bracken, M. B., Djulbegovic, B., Garattini, S., Grant, J., Gülmezoglu, A. M., … Oliver, S. (2014). How to increase value and reduce waste when research priorities are set. *Lancet*, *383*(9912), 156–165.

Clason, D. L., & Dormody, T. J. (1994). Analyzing data measured by individual Likert-type items. *Journal of Agricultural Education*, *35*(4), 31–35.

El Saghir, N. S., Khalil, M. K., Eid, T., El Kinge, A. R., Charafeddine, M., Geara, F., … Shamseddine, A. I. (2007). Trends in epidemiology and management of breast cancer in developing Arab countries: A literature and registry analysis. *International Journal of Surgery*, *5*(4), 225–233. doi:10.1016/j.ijsu.2006.06.015

Francis, A. (2015). *Jordan's refugee crisis*. Retrieved from http://carnegieendowment.org/2015/09/21/jordan-s-refugee-crisis/ihwc

Global Health Workforce Alliance. (2010). *The Morocco country case study: Positive practice environments*. Retrieved from http://www.who.int/workforcealliance/knowled6ge/PPEMorocco.pdf

Habibzadeh, F. (2013). Non-communicable diseases in the Middle East. *Lancet, 381*, 1.

Hashemite Kingdom of Jordan Ministry of Planning and International Cooperation. (2016). *Jordan response plan for the Syria crisis 2016-2018*. Amman, Jordan: Author.

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing, 32*(4), 1008–1015. doi:10.1046/j.1365-2648.2000.t01-1-01567.x

Hibbard, J. H., & Greene, J. (2013). What the evidence shows about patient activation: Better health outcomes and care experiences; fewer data on costs. *Health Affairs, 32*(2), 207–214.

Hsu, C. C., & & Sandford, B. A. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment, Research & Evaluation, 12*(10), 1–8.

Mahmoud, A. (2013). *Health challenges in Palestine*. Retrieved from http://www.sciencediplomacy.org/perspective/2013/health-challenges-in-palestine

Memish, Z. A., Zumla, A. I., & Assiri, A. (2013). Middle East respiratory syndrome coronavirus infections in health care workers. *New England Journal of Medicine, 369*(9), 884–886.

Murray, C. J. L., Lopez, A. D., Mathers, C. D., & Stein, C. (2001). *The Global Burden of Disease 2000 project: Aims, methods and data sources*. Retrieved from http://www.who.int/healthinfo/paper36.pdf?ua=1

Peimani, M., Tabatabaei-Malazy, O., & Pajouhi, M. (2010). Nurses' role in diabetes care; a review. *Iranian Journal of Diabetes and Lipid Disorders, 9*(4), 1–9.

Rao, M. A., Donaldson, S. I., & Doiron, K. M. (2015). Positive psychology research in the Middle East and North Africa. *Middle East Journal of Positive Psychology, 1*(1), 60–76.

Saleh, S., Alameddine, M., Mourad, Y., & Natafgi, N. (2015). Quality of care in primary health care settings in the Eastern Mediterranean region: A systematic review of the literature. *International Journal for Quality in Health Care, 27*(2), 79–88.

Silbermann, M., Arnaout, M., Daher, M., Nestoros, S., Pitsillides, B., Charalambous, H., ... Khleif, A. (2012). Palliative cancer care in Middle Eastern countries: Accomplishments and challenges. *Annals of Oncology, 23*(Suppl. 3), 15–28.

United Nations. (2016). *State of Palestine: World statistics pocketbook. United Nations Statistics Division*. Retrieved from http://data.un.org/CountryProfile.aspx?crName=State of Palestine

United Nations High Commissioner for Refugees. (2016). *The UN Refugee Agency*. Retrieved from http://www.unhcr.org/

United Nations Office for the Coordination of Humanitarian Affairs. (2016). *Eastern Africa: Djibouti*. Retrieved from http://www.unocha.org/eastern-africa/about-us/about-ocha-eastern-africa/djibouti

The World Bank. (2016). *Fairness and Accountability: Engaging in Health Systems in the Middle East and North Africa: The World Bank Health Nutrition and Population Sector Strategy for MENA (2013–2018)*. Washington, DC: Author.

World Bank Group. (2013). *In Middle East and North Africa, health challenges are becoming similar to those in Western countries*. Retrieved from http://www.worldbank.org/en/news/press-release/2013/09/04/middle-east-north-Africa-health-challenges-similar-western-countries

World Health Organization. (2006). *The world health report: 2006: Working together for health*. Geneva, Switzerland: Author.

World Health Organization. (2009). *Global health risks: Mortality and burden of disease attributable to selected major risks*. Geneva, Switzerland: Author.

World Health Organization. (2012). *GLOBOCAN 2021: Estimated cancer incidence, mortality and prevalence worldwide in 2012*. Retrieved from http://globocan.iarc.fr/Default.aspx

World Health Organization. (2013a). *Road safety in the Eastern Mediterranean region: Highlights from the global status report on road safety 2013*. Geneva, Switzerland: Author.

World Health Organization. (2013b). *WHO global action plan for the prevention and control of NCDs 2013–2020*. Retrieved from http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf?ua=1

World Health Organization. (2013c). *WHO nursing and midwifery progress report 2008–2012*. Geneva, Switzerland: Author.

World Health Organization. (2014). *Shaping the future of health in the WHO Eastern Mediterranean region: Reinforcing the role of WHO 2012–2016: Mid-term progress report*. Geneva, Switzerland: Author.

World Health Organization. (2016a). *Global strategic directions for strengthening nursing and midwifery 2016–2020*. Geneva, Switzerland: Author.

World Health Organization. (2016b). *Quantifying environmental health impacts: Country groupings*. Retrieved from http://www.who.int/quantifying_ehimpacts/global/ebdcountgroup/en/

World Health Organization. (2016c). *WHO progress report on nursing and midwifery, 2013–2015*. Geneva, Switzerland: Author.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Table S1. Topics With statistically Significant Differences Between Low Child, Low Adult Mortality Countries and High Child, High Adult Mortality Countries

Table S2. Comparison of Current Literature Versus Priority Ranking

JOURNAL OF NURSING SCHOLARSHIP

PROFESSION AND SOCIETY

Occupational Violence and Aggression Experienced by Nursing and Caring Professionals

Tracey Shea, PhD, M App Sci(Applied Statistics)[1], Cathy Sheehan, PhD, B.Com(Hons), Grad Dip Ed[2], Ross Donohue, PhD, B App Psych(Hons), Registered Psychologist, MAPS[3], Brian Cooper, PhD, MA(Social Research & Policy)[4], & Helen De Cieri, PhD, MA(Applied Psychology)[5]

1 Senior Research Fellow, Monash Business School, Monash University, Caulfield East, VIC, Australia
2 Associate Professor, Monash Business School, Monash University, Caulfield East, VIC, Australia
3 Senior Lecturer, Monash Business School, Monash University, Caulfield East, VIC, Australia
4 Associate Professor, Monash Business School, Monash University, Caulfield East, VIC, Australia
5 Professor, Monash Business School, Monash University, Caulfield East, VIC, Australia

Key words
Employee safety, health care, nurses, occupational violence and aggression

Correspondence
Dr. Tracey Shea, Monash Business School, Monash University, P.O. Box 197, Caulfield East, VIC, AUSTRALIA 3145. E-mail: tracey.shea@monash.edu

Accepted October 21, 2016

doi: 10.1111/jnu.12272

Abstract

Purpose: To examine the extent and source of occupational violence and aggression (OVA) experienced by nursing and caring professionals. This study also examines the relative contributions of demographic characteristics and workplace and individual safety factors in predicting OVA.

Design: A cross-sectional study design with data collected using an online survey of employees in the nursing and caring professions in Victoria, Australia.

Methods: Survey data collected from 4,891 members of the Australian Nursing and Midwifery Federation (Victorian branch) were analyzed using logistic regression.

Findings: Sixty-seven percent of respondents reported experiencing OVA in the preceding 12 months, with nearly 20% experiencing OVA on a weekly or daily basis. The dominant sources of OVA were patients (79%) or relatives of patients (48%). Logistic regression analysis revealed that respondents working in public hospitals and aged care facilities were more likely to experience OVA, compared to those working in other workplaces. While higher levels of safety compliance reduced the likelihood of experiencing OVA, role overload and workplace safety factors such as prioritization of employee safety and leading indicators of occupational health and safety were stronger predictors.

Conclusions: The likelihood of healthcare workers experiencing OVA varies across demographic and workplace characteristics. While some demographic characteristics and individual safety factors were significant predictors, our results suggest that a greater reduction in OVA could be achieved by improving workplace safety.

Clinical Relevance: The study's outcomes identify workforce segments that are most vulnerable to OVA. The study also highlights workplace safety factors such as the prioritization of employee safety that might assist in the reduction of OVA.

Occupational violence and aggression (OVA) is an increasing global phenomenon, with healthcare workers being a particularly vulnerable group (Cashmore, Indig, Hampton, Hegney, & Jalaludin, 2012; Opie et al., 2010). While there is no consensus on what constitutes OVA (Victorian Auditor General's Office, 2015), the definition we use is: "any incident where an employee is abused, threatened or assaulted in circumstances arising out of,

Journal of Nursing Scholarship, 2017; 49:2, 236–243.

or in the course of, their employment" (Department of Health, 2011, p. 8). Healthcare workers play a critical role in community care, but the nature of this community role exposes them to considerable risk of OVA (Victorian Auditor General's Office, 2015). A review by Spector, Zhou, and Che (2014) reported that worldwide 36% of nurses had been exposed to physical violence at work and 66% had been exposed to nonphysical violence. Among the 13 occupations studied by LeBlanc and Kelloway (2002), the second highest risk exposure and second highest violence prevalence rates occurred for nurses; police officers were the only occupational group found to experience higher levels of OVA.

OVA is an important area of research in the field of occupational health and safety (OHS), not only because of societal expectations of safety and dignity at work, but also because OVA has been reported to have flow on effects beyond the initial physical or emotional impact of a violent or aggressive incident. Individual responses to exposure to physical violence and verbal aggression include increased absenteeism and turnover and reduced productivity (Schat & Kelloway, 2005). Lanctôt and Guay's (2014) systematic review identified several categories of detrimental consequences of OVA, including physical, psychological, emotional, and work functioning, as well as social and financial well-being and diminished patient care. These consequences highlight the direct and indirect costs of OVA to individuals, patients, workplaces, and society in general.

Comparisons across world regions undertaken by Spector et al. (2014) showed that the highest rate of exposure to OVA among nurses was in the Anglo region (i.e., Australia, New Zealand, England, Ireland, Scotland, Canada, and United States), where patients were the dominant source of physical violence. Within Australia, several studies have reported high rates of exposure to OVA in the healthcare sector (e.g., Farrell, Shafiei, & Chan, 2014; Roche, Diers, Duffield, & Catling-Paull, 2010) and, consistent with other countries, patients were the main perpetrators of violence towards nurses. However, the prevalence of OVA in the healthcare industry is unclear and requires clarification (Victorian Auditor General's Office, 2015). In response, the first aim of our study is to determine the extent and source of OVA experienced by nursing and caring professionals in the healthcare industry.

Along with the call for greater understanding of the extent of the problem, Farrell et al. (2014) emphasized the need to understand the factors that protect staff and reduce risk. Research has focused on the workplace context and has shown that factors such as role overload, work demands or job strain (Magnavita, 2014; Rodwell, Demir, & Flower, 2013), poor staffing levels (Farrell & Shafiei, 2012), lack of leadership (Roche et al., 2010), and lack of social support (Magnavita, 2014) increase the likelihood of OVA.

Viewing the OVA research in the context of the broader safety literature and consistent with Clissold, Buttigieg, and De Cieri (2012), we apply Bandura's (1986) social cognitive theory to understand the context for OVA. The premise of social cognitive theory is that people are considered to be completely driven by neither external stimuli nor internal factors, but rather a combination of the environment, the person, and his or her behavior. Clissold et al. (2012) argued that a triadic framework encompassing the environment, the person, and the behavior could guide research in workplace safety.

As noted above, much of the OVA risk prevention research has focused on the workplace context, but there has been limited investigation of the relative contribution of workplace (environmental) and personal and behavioral (individual) factors in predicting OVA. One exception has been the work of Chang, Eatough, Spector, and Kessler (2012), which, within a broader model, showed that a poor psychological violence prevention climate was associated with reduced personal motivation that, in turn, was related to prevention behaviors. The idea of a climate means that there are particular meaningful patterns of behavior and interaction among people within organizations (Schneider, Bowen, Ehrhart, & Holcombe, 2000). A positive safety climate exists when management commits attention and resources to workers' safety, for example, by discussing safety, having safety policies that are enforced, and offering safety training. Such efforts are apparent to employees who perceive the climate as one that encourages safety, and it leads to behavior that minimizes the likelihood of work-related injuries. Chang et al. (2012) showed that clear workplace policies prompt management responses to assaults and prioritizing safety led to increases in employee motivation and behaviors aimed at preventing OVA.

While it would be difficult to control all of the circumstances to which healthcare workers are exposed, following Clissold et al.'s (2012) argument based on social cognitive theory, that workplace initiatives aimed to improve OHS must encompass the environment and the person, the second aim of the current study is to analyze OVA risk at two levels: the workplace and the individual level. Specifically, the workplace focus is on the role senior managers and supervisors perform in proactively committing to a safe working environment by implementing positive OHS policies and practices (also known as leading indicators of OHS), encouraging supportive supervisor behavior, and prioritizing staff safety. At the individual level, the study considers the person and his or her behaviors via personal safety motivation

and the behaviors of safety compliance and safety participation.

In summary, this article examines the following questions: What is the prevalence of OVA experienced by members of the nursing and caring professions? What are the dominant sources of OVA, in general, and by demographic group (gender, age, job role, and workplace type)? Finally, after controlling for demographic factors and role overload, what is the relative contribution of individual safety factors (safety motivation, safety compliance, and safety participation) compared with workplace safety factors (leading indicators of OHS, the prioritization of employee safety, supervisor support for safety) in predicting the likelihood that employees will experience OVA?

Methods

Sample and Procedure

All members of the Australian Nursing and Midwifery Federation branch in Victoria, Australia, were invited to participate in an OHS survey. The survey was conducted online, and two reminder emails were sent 2 weeks and 4 weeks after the initial email invitation. Overall, 69,927 members had the opportunity to participate in the survey. Responses were received from 4,891 members (7% response rate), comprising 3,273 registered nurses (67%), 1,055 enrolled nurses (22%), 407 midwives (8%), and 156 personal carers (3%). The project was approved by the university's Human Research Ethics Committee, and all respondents were assured of confidentiality and anonymity.

Measures

The survey included demographic questions for gender, age, job role (e.g., registered nurse), and workplace type (e.g., public hospital). Respondents also answered questions about their experience of OVA, role overload, individual safety factors (safety motivation, safety compliance, and safety participation), and workplace safety factors (leading indicators of OHS, prioritization of employee safety, and supervisor support for safety).

Occupational violence and aggression. We included two single-item measures to examine respondent experiences of OVA adapted from Hegney, Plank, and Parker (2003). Initially, respondents were asked, "have you experienced occupational violence and/or aggression at your workplace during the last 12 months? (1 yes daily, 2 yes weekly, 3 yes monthly, 4 yes a few times, 5 no, never)." Respondents who answered "yes" to this item were then asked a follow-up question: "From whom have you experienced occupational violence and/or aggression at your workplace during the last 12 months? (Please select all that apply: supervisors/colleagues/subordinates, patients, relatives of patients, visitors of patients, other members of the public)."

Role overload. We also included a measure of role overload, the quantitative workload inventory developed by Spector and Jex (1998), as a covariate. The measure is a five-item scale that assesses both the volume and pace of employee workload using a 5-point frequency scale ranging from *less than once per month* (1) to *several times per day* (5) ($\alpha = .90$). This measure has been widely used in organizational behavior and safety research and has been shown to have sound psychometric properties. Cronbach's alpha for this scale was .90, which is consistent with earlier studies (e.g., Jensen, Patel, & Messersmith, 2013).

Individual safety factors. Individual safety factors were measured using three scales: safety motivation, safety compliance, and safety participation (Neal & Griffin, 2006). Each measure contains three items (e.g., "I use the correct safety procedures for carrying out my job"), which are rated on a 5-point scale from *strongly disagree* (1) to *strongly agree* (5). The safety motivation, safety compliance, and safety participation scales are widely used by safety researchers and have been shown to have sound psychometric properties (see Christian, Bradley, Wallace, & Burke, 2009). All three measures displayed very good reliability, with Cronbach alphas ranging from .86 to .90, and this is consistent with earlier studies (e.g., Shea, De Cieri, Donohue, Cooper, & Sheehan, 2016).

Workplace safety factors. The measures for workplace safety factors included the Organizational Performance Metric-Monash University (OPM-MU; Shea et al., 2016), a measure of supervisor support for safety (Lauver, Lester, & Le, 2009), and a measure of prioritization of employee safety that was developed by the authors.

The OPM-MU (Shea et al., 2016) is an adaptation of the Institute for Work and Health Organizational Performance Metric (IWH-OPM; IWH, 2011) and contains eight items measuring leading indicators of OHS (e.g., "everyone has the tools and/or equipment they need to complete their work safely"). The items are rated on a 5-point scale from *strongly disagree* (1) to *strongly agree* (5). The study by Shea et al. (2016) showed this scale to be a valid and reliable measure of OHS leading indicators. Consistent with that study, we found the OPM-MU to have excellent reliability ($\alpha = .91$).

The supervisor support for safety scale is a three-item measure rated on a 5-point frequency scale from *not at all* (1) to *a great extent* (5). The three items that comprise this scale were subjected to exploratory factor analysis (principal axis factoring), which revealed a single factor structure (explaining 88% of the common variance) and excellent reliability ($\alpha = .96$).

The three items of the prioritization of employee safety scale were rated on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5). Exploratory factor analysis (principal axis factoring) of the three items revealed a single factor structure (explaining 94% of the common variance) and the measure was also found to be reliable ($\alpha = .97$).

Statistical Analysis

We used summary statistics to examine the prevalence and sources of OVA across demographic groups. A hierarchical logistic regression was conducted with the experience of OVA as the criterion and categorized as a dichotomous variable (coded 1 = *yes*, 0 = *no*). The first stage included a continuous (role overload) and four categorical (gender, age, job role, and workplace type) predictors. In the second stage, three predictors were added measuring individual safety factors (safety motivation, safety compliance, and safety participation), and the third stage included three predictors measuring workplace safety factors (leading indicators of OHS, prioritization of employee safety, and supervisor support for safety).

Results

Characteristics of the Respondents and Their Workplaces

Table 1 summarizes characteristics of the respondents and their workplaces. Nearly all respondents were female and between the ages of 46 and 65 years. Most had been employed in the nursing and caring profession for more than 10 years. More than half reported working as registered nurses and most worked in either public or private hospitals. Due to the anonymous nature of the survey, respondents could not be directly compared with nonrespondents. Nevertheless, the sample characteristics are highly consistent with national statistics on the nursing and midwifery workforce in Australia (Australian Institute for Health and Welfare, 2013).

Table 1. Characteristics of the Respondents and Their Workplaces

Demographic		*n*	%
Gender	Male	356	7
	Female	4,511	93
Age	18–25 years	191	4
	26–35 years	571	12
	36–45 years	881	18
	46–55 years	1,782	36
	56+ years	1,458	30
Job role	Registered nurse	3,273	67
	Enrolled nurse	1,055	22
	Midwife	407	8
	Personal carer	156	3
Workplace type	Hospital, public	2492	54
	Hospital, private	589	13
	Aged care facility	956	21
	General practice clinic	154	3
	Local government	77	2
	Community	341	7

Prevalence and Sources of OVA in the Nursing and Caring Profession

Overall, 67% of respondents indicated that they had experienced OVA in the preceding 12 months. Forty-four percent of respondents had experienced OVA a few times in the past year, 6% had experienced OVA monthly, 11% had experienced OVA on a weekly basis, and 6% experienced OVA daily. Respondents who experienced OVA in the preceding 12 months indicated that the dominant source of OVA was patients (79%), followed by relatives of patients (48%), visitors of patients (26%), and members of the public (8%).

Table 2 displays the prevalence and source of OVA by demographic group. Statistically significant differences were observed for gender, χ^2 (1, $n = 4{,}572$) = 5.1, $p = .013$, job role, χ^2 (3, $n = 4{,}591$) = 17.5, $p = .001$, and workplace type, χ^2 (5, $n = 4{,}325$) = 165.7, $p < .001$. Compared to females, respondents who were male showed a higher prevalence of OVA in the preceding 12 months. Respondents who were employed as enrolled nurses or personal carers showed a higher prevalence of OVA, and respondents working in public hospitals or aged care facilities also showed a higher prevalence of OVA. No significant differences were observed across age groups ($p > .05$).

Some variations in the source of OVA were observed across job role; for example, midwives were more likely to experience OVA from patient relatives and visitors than patients themselves. In contrast, registered nurses, enrolled nurses, and personal carers were more likely to experience OVA from patients rather than patient relatives or visitors. Overall, patients and relatives of patients were the dominant sources of OVA.

OVA and Workplace Safety Factors

The results of the hierarchical logistic regression are displayed in **Table 3**. Each stage of the model, testing

Table 2. Prevalence and Source of Occupational Violence and Aggression by Respondent and Workplace Characteristics

Demographic		Overall	Colleagues	Patients	Patient relative	Patient visitor	Public
Gender	Male	72%	21%	87%	55%	36%	14%
	Female	66%	18%	78%	48%	25%	7%
Age	18–25 years	4%	9%	86%	58%	41%	4%
	26–35 years	12%	15%	84%	58%	34%	8%
	36–45 years	18%	19%	80%	50%	29%	6%
	46–55 years	37%	20%	78%	47%	24%	8%
	56+ years	30%	19%	77%	43%	21%	9%
Job role	Registered nurse	66%	19%	79%	50%	28%	9%
	Enrolled nurse	71%	16%	87%	38%	16%	5%
	Midwife	63%	21%	52%	69%	40%	6%
	Personal carer	76%	17%	87%	24%	10%	1%
Workplace	Hospital, public	73%	18%	79%	58%	35%	9%
	Hospital, private	54%	27%	69%	46%	23%	6%
	Aged care facility	74%	15%	87%	31%	11%	1%
	General practice clinic	53%	17%	83%	33%	6%	14%
	Local government	41%	39%	48%	29%	0%	6%
	Community	66%	17%	79%	48%	28%	8%

Note. Percentages across subgroups do not add up to 100% because respondents were asked to check all sources of occupational violence and aggression.

the relationship between predictor variables and the experience of OVA, was significant ($p < .001$), and the -2 log likelihood value reduced from 4,954.11 in model 1 to 4,710.79 in model 3.

The odds ratios (ORs) from model 3 showed that respondents in the oldest age group (56 or more years) were more likely than the youngest employees (18–25 years) to experience OVA from patients (OR = 1.61). The ORs for respondent role showed that midwives were less likely (OR = 0.67) than registered nurses to have experienced OVA in the past 12 months ($p < .01$). Respondents working in private hospitals (OR = 0.42), general medical practice clinics (OR = 0.47), local government (OR = 0.35), and community services (OR = 0.48) were less likely to experience OVA than those employed in public hospitals. No statistically significant differences were observed in the experience of OVA between respondents working in public hospitals and aged care facilities. Respondents who experienced greater levels of role overload were more likely (OR = 1.49) to have experienced OVA in the past 12 months.

Turning to individual safety factors, respondents with higher levels of safety compliance were less likely to experience OVA (OR = 0.76). However, those with higher levels of safety motivation (OR = 1.22) and safety participation (OR = 1.33) were more likely to experience OVA. Finally, with regard to workplace safety factors, those employed in workplaces with a greater focus on OHS leading indicators (OR = 0.69), a higher prioritization of employee safety (OR = 0.52), or with greater supervisor support for safety (OR = 0.89) were less likely to have experienced OVA in the past 12 months.

Discussion

Addressing the first research question, the outcomes of this study indicate that the extent of OVA in the Victorian healthcare industry is substantial. Sixty-seven percent of respondents reported experiencing OVA at least once in the past 12 months, and nearly 20% reported experiencing OVA on a weekly or daily basis. These levels are higher than those reported in previous studies (Farrell & Shafiei, 2012; Farrell et al., 2014). However, it is difficult to compare our findings to earlier work due to the different time spans (1 week to 12 months) used to measure the extent of OVA in the nursing and caring profession.

Differences in the experience of OVA by demographic groups were observed. However, while a larger percentage of men reported having been exposed to OVA in the past 12 months compared to women, the logistic regression revealed that this was not statistically significant. The logistic regression also revealed that older respondents were more likely to have experienced OVA compared to younger respondents. Enrolled nurses and personal carers experienced higher rates of OVA compared to registered nurses and midwives, but these findings were not statistically significant in the logistic regression. Further, respondents in public hospitals and aged care facilities experienced OVA at greater rates than those in private hospitals, general practice clinics,

Table 3. Logistic Regression for Predicting the Likelihood of Experiencing Occupational Violence and Aggression

	Model 1		Model 2		Model 3	
	B (*SE*)	OR (95% CI)	B (*SE*)	OR (95% CI)	B (*SE*)	OR (95% CI)
Female	−0.19 (0.14)	0.83 (0.63–1.09)	−0.16 (0.14)	0.85 (0.65–1.12)	−0.10 (0.14)	0.91 (0.68–1.20)
18–25 years	Ref cat		Ref cat		Ref cat	
26–35 years	0.24 (0.19)	1.23 (0.87–1.85)	0.25 (0.19)	1.28 (0.88–1.87)	0.20 (0.20)	1.22 (0.83–1.80)
36–45 years	0.28 (0.18)	1.33 (0.93–1.90)	0.32 (0.19)	1.38 (0.96–1.98)	0.26 (0.19)	1.29 (0.89–1.87)
46–55 years	**0.36 (0.18)***	**1.44 (1.02–2.03)**	0.40 (0.18)	1.49 (1.05–2.10)	0.30 (0.18)	1.35 (0.95–1.92)
56+ years	**0.50 (0.18)****	**1.64 (1.16–2.33)**	**0.54 (0.18)****	**1.72 (1.21–2.45)**	**0.48 (0.18)****	**1.61 (1.12–2.31)**
Registered nurse	Ref cat		Ref cat		Ref cat	
Enrolled nurse	0.14 (0.10)	1.15 (0.95–1.38)	0.15 (0.10)	1.16 (0.97–1.40)	0.18 (0.10)	1.20 (0.99–1.45)
Midwife	**−0.30 (0.12)***	**0.74 (0.58–0.94)**	**−0.31 (0.12)***	**0.74 (0.58–0.94)**	**−0.40 (0.13)****	**0.67 (0.52–0.86)**
Personal carer	0.44 (0.23)	1.56 (0.99–2.44)	**0.46 (0.23)***	**1.59 (1.01–2.50)**	0.31 (0.24)	1.37 (0.86–2.17)
Hospital, public	Ref cat		Ref cat		Ref cat	
Hospital, private	**−0.84 (0.10)****	**0.43 (0.36–0.53)**	**−0.84 (0.10)****	**0.43 (0.35–0.53)**	**−0.87 (0.11)****	**0.42 (0.34–0.51)**
Aged care	−0.11 (0.11)	0.90 (0.73–1.10)	−0.08 (0.11)	0.93 (0.75–1.14)	−0.04 (0.11)	0.97 (0.78–1.20)
General practice	**−0.76 (0.19)****	**0.47 (0.33–0.68)**	**−0.76 (0.19)****	**0.47 (0.32–0.68)**	**−0.77 (0.20)****	**0.47 (0.32–0.68)**
Local government	**−1.17 (0.25)****	**0.31 (0.19–0.51)**	**−1.17 (0.26)****	**0.31 (0.19–0.51)**	**−1.06 (0.26)****	**0.35 (0.21–0.57)**
Community	**−0.80 (0.13)****	**0.45 (0.35–0.58)**	**−0.79 (0.13)****	**0.46 (0.35–0.59)**	**−0.74 (0.13)****	**0.46 (0.37–0.62)**
Role overload	**0.53 (0.04)****	**1.70 (1.59–1.82)**	**0.53 (0.04)****	**1.69 (1.58–1.82)**	**0.40 (0.04)****	**1.49 (1.38–1.60)**
Motivation			0.14 (0.09)	1.15 (0.97–1.37)	**0.20 (0.09)***	**1.22 (1.02–1.46)**
Compliance			**−0.36 (0.08)****	**0.70 (0.60–0.82)**	**−0.28 (0.08)****	**0.76 (0.64–0.89)**
Participation			0.07 (0.06)	1.07 (0.95–1.21)	**0.29 (0.07)****	**1.33 (1.16–1.52)**
OPM-MU					**−0.37 (0.07)****	**0.69 (0.61–0.79)**
Prioritization					**−0.65 (0.10)****	**0.52 (0.43–0.63)**
Supervisor					**−0.12 (0.05)***	**0.89 (0.80–0.98)**
Constant	**−0.78 (0.40)**	**0.46**	−0.75 (0.40)	0.47	**2.07 (0.47)****	**7.92**
χ^2 (*df*)	**411.58 (14)****		**435.01 (17)****		**654.91 (20)****	
Log likelihood	4954.11		4930.69		4710.79	
Nagelkerke R^2	.13		.14		.20	

Note. $N = 4{,}273$. Boldface values denote significant predictors. CI = confidence interval; OPM-MU = Organizational Performance Metric-Monash University; OR = odds ratio.
*$p < .05$; **$p < .01$.

local government, and community settings. Farrell et al. (2014) similarly reported higher levels of OVA for public sector nurses and suggested that this may be related to higher levels of patient acuity.

Addressing the second research question, the dominant source of OVA was patients; however, relatives of patients were also a major source of OVA, followed by patient visitors, colleagues, and, to a small degree, members of the public. This pattern is broadly consistent regardless of gender, age, job role, and workplace type, although some demographic subgroup differences exist. For example, registered and enrolled nurses were more likely to report OVA from patients, whereas midwives were more likely to report OVA from patient relatives.

With respect to the third research question, while a higher level of safety compliance was shown to reduce the likelihood of experiencing OVA, higher levels of both safety motivation and safety participation were shown to increase the likelihood of experiencing OVA. The relationship between motivation, participation, and the increased experience of OVA appears counterintuitive. One explanation may be that individuals with higher levels of personal safety motivation and willingness to engage in safety participation behavior may be more proactive and likely to step in to de-escalate OVA situations. Finally, our investigation reveals that workplace safety factors, particularly the prioritization of employee safety, were more important in reducing the likelihood of OVA than were individual safety factors.

These findings are important to the healthcare industry because they highlight ways in which policymakers, employers, and industry partners can address workplace violence. For example, strengthening workplace factors, particularly a greater prioritization of staff safety with respect to patient safety, will reduce the likelihood of violence against healthcare workers. This suggests that despite the external origins of workplace violence (i.e., patients and visitors), policies and practices can be developed and actions taken by the organization to protect its workers. Policymakers, such as departments

of health as well as safety regulators, could provide sectorwide leadership and education activities, as well as inspection or enforcement mechanisms to protect workers from OVA in the health sector. Violence at work is an important issue to resolve as it is a threat not just to worker health, safety, and mental well-being, but also to workers' dignity and sense of security (International Labor Organization [ILO], 2016). Occupational violence also has negative repercussions for the families of affected workers and incurs substantial costs to their workplace and society in general (ILO, 2016). Industry partners such as healthcare unions can offer additional resources for workers, such as campaigns to raise awareness of OVA and mechanisms for workers to report OVA incidents.

Limitations of the present study are the low response rate and the cross-sectional design. However, despite the low response rate, the sample is large and reasonably representative of the nursing and caring professions in Australia. As this was a cross-sectional survey, efforts were made to reduce common method variance by including measures that use different response anchors, which would reduce the likelihood of common method variance affecting the results.

In summary, a major contribution of the research is that it improves understanding of the extent and sources of OVA in the healthcare industry. The study also builds on Chang et al.'s. (2012) research, which found links between violence prevention climate and employee motivation and behaviors. Our research extends this to show, consistent with social cognitive theory (Clissold et al., 2012), that while higher levels of safety compliance reduce the likelihood of experiencing OVA, role overload and workplace safety factors such as prioritization of employee safety and leading indicators of OHS are stronger predictors.

Conclusions

We found that the likelihood of healthcare workers experiencing OVA varies across demographic characteristics. Furthermore, those working in public hospitals and aged care facilities are also at greater risk of experiencing OVA, compared to those working in other clinical settings. Increasing levels of role overload also increase the likelihood of exposure to OVA. Some demographic characteristics and individual safety behaviors are significant predictors of the experience of OVA; this information could inform workplace initiatives such as programs to train healthcare professionals in de-escalation of situations that might lead to OVA. Further, our results indicate that a greater reduction in OVA could be achieved by initiatives that improve workplace safety. Consequently, while individual safety factors are important, our findings indicate that employee safety must be led and supported at a higher level by proactive and preventive actions such as prioritization of employee safety, implementation of OHS leading indicators, and supervisor support for safety.

Acknowledgments

We acknowledge the support provided for this research project by WorkSafe Victoria and the Institute for Safety Compensation and Recovery Research, Australia. We acknowledge Kathy Chrisfield of the Victorian Branch of the Australian Nursing and Midwifery Federation for her advice in the design of the survey. We acknowledge research assistance provided by Robin Baker, Sarah Lindsay, Naomi Uehara, and Trisha Pettit, Monash University.

Clinical Resources

- Australian Nursing and Midwifery Federation (Victoria Branch). 10-point plan to end violence and aggression in our healthcare facilities: http://www.anmfvic.asn.au/campaigns/2016/07/21/occupational-violence-and-aggression
- Victorian Auditor General's Office. Report on violence in the healthcare industry by the Victorian Auditor General's Office: http://www.audit.vic.gov.au/reports_and_publications/latest_reports/2014-15/20150506-occ-violence.aspx

References

Australian Institute for Health and Welfare. (2013). *Nursing and midwifery workforce 2012*. National health workforce series no. 6. Cat. no. HWL 52. Canberra, Australia: Author.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Cashmore, A. W., Indig, D., Hampton, S. E., Hegney, D. G., & Jalaludin, B. (2012). Workplace abuse among correctional health professionals in New South Wales, Australia. *Australian Health Review*, *36*(2), 184–190.

Chang, C.-H., Eatough, E. M., Spector, P. E., & Kessler, S. R. (2012). Violence-prevention climate, exposure to violence and aggression, and prevention behavior: A mediation model. *Journal of Organizational Behavior*, *33*(5), 657–677.

Christian, M. S., Bradley, J. C., Wallace, J. C., & Burke, M. J. (2009). Workplace safety: A meta-analysis of the roles of person and situation factors. *Journal of Applied Psychology*, *94*(5), 1103–1127.

Clissold, G., Buttigieg, D. M., & De Cieri, H. (2012). A psychological approach to occupational safety. *Asia Pacific Journal of Human Resources*, *50*(1), 92–109.

Department of Health. (2011). *Preventing occupational violence: A policy framework including principles for managing weapons in Victorian health services*. Melbourne, Victoria: Author.

Farrell, G. A., & Shafiei, T. (2012). Workplace aggression, including bullying in nursing and midwifery: A descriptive survey (the SWAB study). *International Journal of Nursing Studies*, *49*(11), 1423–1431.

Farrell, G. A., Shafiei, T., & Chan, S.-P. (2014). Patient and visitor assault on nurses and midwives: An exploratory study of employer "protective" factors. *International Journal of Mental Health Nursing*, *23*(1), 88–96.

Hegney, D., Plank, A., & Parker, V. (2003). Workplace violence in nursing in Queensland, Australia: A self-reported study. *International Journal of Nursing Practice*, *9*(4), 261–268.

Institute for Work and Health. (2011). *Benchmarking organizational leading indicators for the prevention and management of injuries and illnesses: Final report*. Toronto, Canada: Author.

International Labour Organisation. (2016). *Background paper for discussion at the Meeting of Experts on Violence against Women and Men in the World of Work* (3–6 October 2016). Geneva, Switzerland: Conditions of Work and Equality Department, International Labor Organization.

Jensen, J. M., Patel, P. C., & Messersmith, J. G. (2013). High-performance work systems and job control: Consequences for anxiety, role overload, and turnover intentions. *Journal of Management*, *39*(6), 1699–1724.

Lanctôt, N., & Guay, S. (2014). The aftermath of workplace violence among healthcare workers: A systematic literature review of the consequences. *Aggression and Violent Behavior*, *19*(5), 492–501.

Lauver, K. J., Lester, S., & Le, H. (2009). Supervisor support and risk perception: Their relationship with unreported injuries and near misses. *Journal of Managerial Issues*, *21*(3), 327–343.

LeBlanc, M. M., & Kelloway, E. K. (2002). Predictors and outcomes of workplace violence and aggression. *Journal of Applied Psychology*, *87*(3), 444–453.

Magnavita, N. (2014). Workplace violence and occupational stress in healthcare workers: A chicken-and-egg situation: Results of a 6-year follow-up study. *Journal of Nursing Scholarship*, *46*(5), 366–376.

Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology*, *91*(4), 946–953.

Opie, T., Lenthall, S., Dollard, M., Wakerman, J., MacLeod, M., Knight, S., . . . Rickard, G. (2010). Trends in workplace violence in the remote area nursing workforce. *Australian Journal of Advanced Nursing*, *27*(4), 18–23.

Roche, M., Diers, D., Duffield, C., & Catling-Paull, C. (2010). Violence toward nurses, the work environment, and patient outcomes. *Journal of Nursing Scholarship*, *42*(1), 13–22.

Rodwell, J., Demir, D., & Flower, R. L. (2013). The oppressive nature of work in healthcare: predictors of aggression against nurses and administrative staff. *Journal of Nursing Management*, *21*(6), 888–897.

Schat, A. C. H., & Kelloway, E. K. (2005). Workplace violence. In J. Barling, E. K. Kelloway, & M. Frone (Eds.), *Handbook of work stress* (pp. 189–218). Thousand Oaks, CA: Sage.

Schneider, B., Bowen, D., Ehrhart, M., & Holcombe, K. (2000). The climate for service. In N. Ashkanasy, C. Wilderom, & M. Peterson (Eds.), *Handbook of organizational culture and climate* (pp. 21–36). Thousand Oaks, CA: Sage.

Shea, T., De Cieri, H., Donohue, R., Cooper, B., & Sheehan, C. (2016). Leading indicators of occupational health and safety: An employee and workplace level validation study. *Safety Science*, *85*, 293–304.

Spector, P., & Jex, S. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology*, *3*(4), 356–367.

Spector, P. E., Zhou, Z. E., & Che, X. X. (2014). Nurse exposure to physical and nonphysical violence, bullying, and sexual harassment: A quantitative review. *International Journal of Nursing Studies*, *51*(1), 72–84.

Victorian Auditor General's Office. (2015). *Occupational violence against healthcare workers*. Melbourne, Victoria, Australia: Author.