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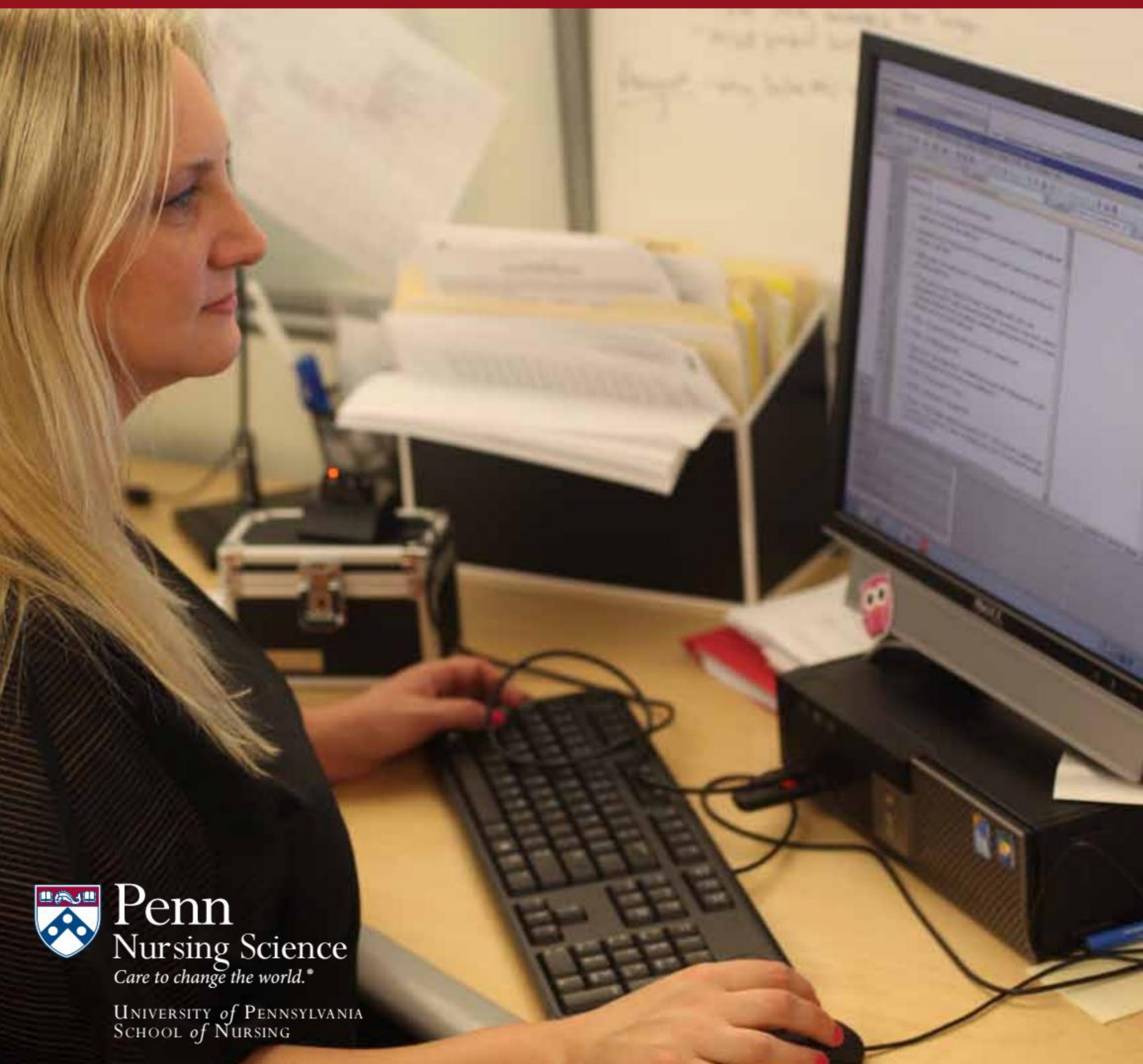

Mission

The *Journal of Nursing Doctoral Students Scholarship* is a scholarly publication dedicated to the development of doctoral student scholarship and the advancement of nursing science. This journal is peer reviewed by doctoral students, edited by doctoral students, and targeted towards health practitioners, educators, scientists, and students. This journal has both a professional and an educational mission. To serve the profession, each issue features articles that represent diverse ideas, spark intellectual curiosity, and challenge existing paradigms. Doctoral students will have an opportunity to explore and analyze issues and ideas that shape health care, the nursing profession, and research around the world. To fulfill its educational mission, doctoral students will be trained in the editorial and administrative tasks associated with the journal's publication and assisted in preparing original manuscripts for professional publication. This journal will be evidence of the scholarly development of nurse scientists.

Thank You

We extend our sincere thanks to the following individuals (faculty, post-docs, and doctoral students) for their time and effort invested into the current edition (listed in alphabetical order):
Patricia Brennan, PhD, RN
Pamela Cacchione, PhD, CRNP, BC, FAAN
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Justine S. Sefcik, MS, RN
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Contents

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University of Pennsylvania School of Nursing

Darina Petrovsky, MN, RN first received her Bachelors of Musical Arts from the University of Michigan, and then pursued her Masters in Nursing (MN) from the Frances Payne Bolton School of Nursing (FPB) at Case Western Reserve University (CWRU). At graduation Darina was awarded the Dean's Legacy Award for her academic excellence, service to the larger community and the capacity for leadership and innovation in health care. Darina combined her passions for music and care for older adults to continue her doctoral studies at the University of Pennsylvania working with Pamela Cacchione, PhD, CRNP, BC, FAAN and Roy Hamilton, MD, MS, where she was the first nursing student to enroll and complete a Certificate for Social, Cognitive and Affective Neuroscience. Darina is exploring the cognitive abilities associated with music in older adults with mild cognitive impairment (MCI) with the ultimate goal of developing a music-based intervention for older adults with cognitive impairment. Darina is a member of the Gerontological Society of America (GSA); the American Academy of Neurology and Sigma Theta Tau International Society. She is a Ruth L. Kirschstein NRSA Pre-Doctoral Fellow (NIH/NIA; F31AG055148) and her past accomplishments include being selected as a 2014-2016 National Hartford Centers of Gerontological Nursing Excellence Patricia G. Archbold Scholar and 2014-2016 Jonas Nurse Leader Scholar.

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Dr. Paule V. Joseph received her PhD in Nursing from the University Pennsylvania and a Master's Degree as Family Nurse Practitioner from Pace University. Dr. Joseph conducted her dissertation work at the Monell Chemical Senses Center the leaders in chemosensory biology. She is currently a clinical and translational post-doctoral fellow at the National Institutes of Nursing Research (NINR). Dr. Joseph has recently been funded by The Rockefeller University to study the effects of the microbiome in eating behavior, taste and obesity phenotype. Dr. Joseph's research interests in how brain-gut mechanism, eating behavior & genetics factor into obesity development and interventions stems from her clinical practice and research experiences. Dr. Joseph also has a strong interest in bioinformatics, research methods, transparency, and reproducibility. Prior to her PhD, she worked at Mount Sinai Hospital and at Columbia Presbyterian-Weill Cornell Hospital in New York City. Dr. Joseph brings a unique perspective to her program of research—a perspective that incorporates both clinical and bench science approaches.

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Editorial

The use of big data in nursing science

For the fourth volume of the *Journal of Nursing Doctoral Students Scholarship* (JNDSS) we focus on one of the emerging salient topics in nursing and health sciences research – "big data." To help answer questions about the importance of big data to nursing science and practice, we turned to Patricia Brennan, RN, PhD (Gnu 70), once the Lillian L. Moehlman Bascom Professor at the School of Nursing and College of Engineering at the University of Wisconsin-Madison and now the newly appointed director of the National Library of Medicine. (It is worth noting that this is the first time a nurse will lead this important interdisciplinary institution). In addition, we sought comment from Maxim Topaz, RN, PhD, an alumnus of Penn's School of Nursing and member of the JNDSS editorial board and an informatics specialist who completed a post-doctoral research fellowship at Harvard Medical School. We asked, what are the opportunities in big data for young investigators?

What is big data?

Before we discuss how nurses can utilize big data to advance our science and offer conclusions, we will define what we mean by "big data." The term "big data" refers primarily to very large amounts of data often coming from multiple diverse and uncertain sources that exceed the capacity of modern computer storage. Big data is also characterized as variable in type – e.g. not necessarily alphanumeric in nature, and generated at extremely high speeds. Biomedical big data may include genomic, environmental, health, behavioral, imaging data among other categories ("Big Data to Knowledge (BD2K)."). Special techniques to collect, analyze, and interpret big data fall under the umbrella term, "data science." A variety of methodological approaches can be utilized in either a primary or secondary analysis. In a 2015 article in the *Journal of Nursing Scholarship,* Dr. Brennan discerns between traditional methods, such as identifying variables a priori and controlled exploration of a sample, versus the data science approach that targets examining patterns that emerge from the data from myriad, large "messy" sources (Brennan & Bakken, 2015).

How will data science evolve in the nursing discipline over the next few years?

In our interview, Dr. Brennan expanded on three different ways data science is evolving in nursing through the work of: (1) nurse data scientists, (2) nurse researchers who participate in data science research, and (3) data-informed clinical practice. Dr. Brennan further elaborated on the philosophy and methodology specific to data science that can inform nursing science. "Just as there are different kinds of scientific questions which can be addressed by qualitative methods or by experimental design and quantitative

approaches, data science strategies allow us to ask questions only answered by large amounts of data contained in separate sources. These questions are usually characterized by: (1) a need to understand the relationship between large and diverse data types, and (2) the challenge of managing data from disparate sources." Traditionally in nursing science, our data and analytic techniques are located within the same source; rather, data science does not constrain us to one database and opens up new possibilities regarding the types of questions that can be answered. As Dr. Brennan notes "data science studies are exploratory in nature, rather than confirmatory" (P. Brennan, personal communication, July, 11, 2016). Therefore nurses are no longer constrained by the traditional scientific methods and are open to using more flexible research approaches, combining multiple diverse and disparate data sources to understand nursing-sensitive phenomena and improve people's lives.

One example is Dr. Topaz's research as presented in "Clinicians' reports in electronic health records versus patients' concerns in social media: A pilot study of adverse drug reactions of aspirin and atorvastatin" (Topaz et al., 2016). In this study, the research team explored a large repository of electronic health record data and social media data to better understand differences and similarities between clinician-reported adverse drug reactions and patients' concerns. Two common medications were examined: aspirin (n=31,817 adverse drug reactions accessible in clinical data; n=19,186 potential adverse drug reactions accessible in social media data) and Lipitor (n=15,047 adverse drug reactions accessible in clinical data; n=23,408 potential adverse drug reactions accessible in social media data). The study found that common drug reactions matched the most frequent patients' concerns. Social media data, however, included more concerns about reactions not frequently reported in the clinical data. For example, discussions of aspirin-induced hypoglycemia were found only in social media. The study used free text processing – also called natural language processing – to extract data from social media sites.

How does data science advance the nursing discipline?

Nurses are presented with several opportunities with the emergence of data science. Dr. Brennan remarks that when nurse scientists are free to answer their scientific questions using non-traditional data science strategies it allows for a more robust ability to understand patients' lives more fully and with more clarity. However, Dr. Brennan cautions, "It is critical to remember that nursing must use all methods, familiar and emerging, for generating nursing knowledge" (Brennan & Bakken, 2015). Dr. Topaz adds that by using big data approaches, nurse scientists can incorporate more data sources (e.g. social media data, geo-location data, patient continuous vital sign monitoring data, etc.) in their research to more deeply explore variables.

How can nursing doctoral students get involved in data science?

There are many ways that doctoral students in nursing can get involved in big data and data science, and we offer several helpful online resources in the references section. Dr. Brennan recommends that students become educated on what data science offers.

For example, the NIH commons portal, a repository of large datasets collected first for one purpose, may be used to answer different kinds of questions ("Data Science at NIH Commons," 2016). Doctoral students should explore the Big Data to Knowledge (BD2K) centers located across the United States. The purpose of these centers is to "develop new approaches, methods, software tools, and related resources" in addition to providing training to advance big data science (NIH, "Big data to knowledge [BD2K]," 2015).

Doctoral students can also look for institutional training grants, and within their own university they may find researchers who are recipients of scientist training/career development awards ("BD2K Scientist Training and Career Development,"). Further, Dr. Brennan recommends that students "examine parts of one's own research and think about how data science strategies might actually help." She encourages students to think creatively about their questions that cannot be answered with existing methodologies and reach beyond their comfort zones to answer these important inquiries (P. Brennan, personal communication, July, 11, 2016). Doctoral students can do this early in their program, especially as they are thinking about their dissertation work and beyond.

Dr. Topaz offered a personal example of reaching out and extending one's expertise. When he was a doctoral student at the University of Pennsylvania School of Nursing, he worked for several years as research assistant in multiple studies. Working with large and small databases, he became aware that much of the information needed for nursing, and any other kind of health research, is captured in free text. For example, in his dissertation work, Dr. Topaz had to disambiguate free-text medication lists for about 1,000 patients and create a medication list for each patient. Medication names were captured as free text, with many misspellings, abbreviations and other issues that would typically require multiple hours/weeks of standardization. However, Dr. Topaz decided to use a free online tool offered by the National Library of Medicine ("MetaMap - A Tool For Recognizing UMLS Concepts in Text," 2016). The tool uses advanced natural language processing to standardize medication names, dosages/routes, and he found that it took only a few hours to figure out how to apply the tool to the medication data.

The NIH has funded two massive open online courses (MOOCs) on big data science: "Demystifying Biomedical Big Data: A User's Guide" and "Development of a Best Practices in Research Data Management Massive Open Online Course." In addition, platforms like Coursera or edX offer plenty of freely available, highly regarded courses on all aspects of big data, including data ingestion, processing, analytics, and application. Health informatics conferences and other professional gatherings organized by the American Medical Informatics Association (AMIA) and similar organizations are also a good source for many big data relevant ideas and applications. Finally, students can use an upcoming book chapter by Drs. Topaz & Pruinelli to learn more about big data and the competencies needed to be successful in incorporating it into one's program of research (Topaz & Pruinelli, In Press)

Conclusion

Big data science is an emerging scientific field that has direct links to nursing science. As Dr. Brennan poignantly titled her 2015 article in the *Journal of Nursing Scholarship,* "Nursing needs big data and big data needs nursing." Fortunately, there are multiple ways for nurse researchers, nurse practitioners, and doctoral students in nursing to get involved in data science (Brennan & Bakken, 2015). The possibilities are endless, and nurses have the opportunity to contribute to the direction of population health research in the next few decades. Through collaboration with data scientists and through their own data science projects guided by considerations of individuals' health, nurses are key contributors to improving health care.

Darina V. Petrovsky, MN, RN
Susan K. Keim, MS, MSN, CRNP

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Topaz, M., & Pruinelli, L. (In Press). *Big Data and Nursing: Implications for the Future Studies in Health Technology and Informatics.*

Additional Resources

Nursing Knowledge 2015 – This site is the hub of the University of Minnesota School of Nursing's annual big data conference. It includes case studies and reports from the meeting. http://www.nursing.umn.edu/about/calendar-of-events/2015-events/nursing-kno–wledge-2015-big-datascience-conference/index.htm

Precision Medicine and NINR-Supported Nursing Science https://www.ninr.nih.gov/researchandfunding/precisionmedicine#.V5edEaL95dA

NINR Big Data Boot Camp Part 4: Big Data in Nursing Research - Dr. Patricia Brennan (Youtube video) https://www.youtube.com/watch?v=KOFLQ5z05f8&index=4&list=PLXzqLJ4gIAAhzUuEmkfNl5Qveh-_EP5hp

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We would like to thank Dr. Patricia Brennan for taking the time to speak with us about big data. We wish her the best of luck in her new role as the Director of the National Library of Medicine!

Acculturation among Hispanics in the context of childhood obesity: An integrative literature review

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Abstract

This integrative literature review for concept development describes research examining acculturation among Hispanics in the context of childhood obesity during early childhood (2-5 years). A search of CINHAL and PubMed identified 16 studies published in the period 1992-2014 that met inclusion criteria. Results demonstrate that acculturation varies conceptually and operationally. Contextual factors (individual, family, community) and the setting in which acculturation occurs were indicated as important in understanding acculturation in relation to childhood obesity. Some studies (*n*=7) suggested that an increase in parents' acculturation altered weight-related beliefs and dietary and physical activity behaviors, thus influencing risk for childhood obesity. Despite these findings, the effect of acculturation on childhood obesity was unclear, as the majority of articles (*n*=9) demonstrated a nonsignificant relationship between acculturation and childhood obesity. Given the disparate findings, there are limited practice implications currently available for nurses. However, nurse scientists are key players in filling these theoretical and empirical gaps. As Hispanics experience a disproportionate burden of childhood obesity, future research with clear conceptualization and operationalization of acculturation, diverse Hispanic samples, and a combination of quantitative and qualitative methodologies is needed.

Keywords: acculturation, childhood obesity, integrative literature review, culture, Hispanics

Introduction

Hispanics are the largest ethnic minority group in the United States and are estimated to reach 30% of the U.S. population by 2050 (Passel & Cohn, 2008). The term Hispanic encompasses all individuals or groups originating from a Spanish origin culture (i.e. Mexico, Cuba, Puerto Rico) (U.S. Census Bureau, 2013), which demonstrates the cultural heterogeneity inherent in this rapidly growing population. Unfortunately, Hispanics are burdened with health care disparities related to childhood obesity and its related consequences including hypertension and type II diabetes (Centers for Disease Control [CDC], 2014; Ogden, Carroll, Kit, & Flegal, 2014). This indicates the urgency in

understanding concepts such as acculturation, which may play a role in increasing risk for early childhood obesity (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005).

The Centers for Disease Control (CDC) estimates that early childhood overweight and obesity prevalence (2-5 years) is highest among Hispanics (29.8%), when compared to non-Hispanic Blacks (21.9%) and non-Hispanic Whites (20.9%) (Ogden et al., 2014). This is concerning as childhood obesity has numerous adverse physical, psychological, and social consequences. Childhood obesity is associated with higher risk for obesity as an adult, along with increased risk for chronic diseases, such as cardiovascular disease, type 2 diabetes, hypertension, and certain types of cancer (Pan, Blanck, Sherry, Dalenius, & Grummer-Strawn, 2012). There are also negative psychological sequelae for children who are obese, such as poor self-esteem, anxiety, and depression. Social effects of childhood obesity include weight stigmatization (i.e. teasing, being left out of activities), poor quality of life, and social isolation (Halfon, Larson, & Slusser, 2013; Morrison, Shin, Tarnopolsky, & Taylor, 2014; Schwimmer, Burwinkle, & Varni, 2003).

A focus on the early childhood population, 2 to 5 years old, is important for both primary prevention (i.e. before obesity occurs) and secondary prevention (i.e. before serious health problems occur) efforts (Dehghan, Akhtar-Danesh, & Merchant, 2005). Childhood obesity is a multifactorial issue, spanning both modifiable (i.e. physical activity, parenting practices) and non-modifiable (i.e. genetics) factors (Ang, Wee, Poh, & Ismail, 2012). As such, there are numerous pathways that contribute to the experience of childhood obesity. Specific to early childhood (2-5 years), parents offer a central focal point in understanding child health outcomes, such as obesity (Lindsay, Sussner, Kim, & Gortmaker, 2006). For example, parent weight status is a well recognized, accepted risk factor for childhood obesity in early childhood (Reilly et al., 2005). Further, the acculturation level of parents may be a significant factor in determining risk for childhood obesity.

Therefore, the purpose of this integrative literature review for concept development is twofold. First, the authors aim to clarify the concept of acculturation in the context of early childhood obesity (2-5 years) among Hispanics. The second purpose is to better understand the association between parent acculturation and early childhood obesity. Through a better understanding of acculturation, nurse scientists may be able to intervene in preventing potential deleterious effects of acculturation, such as childhood obesity, while fostering characteristics that are helpful in adjusting to cultural change.

Background

Culture implies the norms, values, and beliefs of an individual or social group. Acculturation is embedded within culture and may be defined as a process that occurs when an individual or group encounters a culture that differs from their own culture (Berry, 1997). Certain aspects of culture have the potential to influence health behaviors (e.g. diet, physical activity), which consequently influences health outcomes (e.g. childhood obesity) (Broesch & Hadley, 2012).

In order to understand acculturation in the context of childhood obesity, it is imperative to understand its historical background. The first use of acculturation in the United States is in reference to the changes Native Americans experienced when making contact with European settlers (Powell, 1881). The classic definition was developed in 1936 by the Social Science Research Council to further formalize acculturation as a concept. Redfield, Linton, and Herskovits (1936, p.149) stated, "Acculturation comprehends those phenomena which results when groups of individuals come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups." Further, Gordon (1964) described acculturation as assimilation into a new culture, a process that is inevitable and not reversible, while emphasizing that external aspects of culture such as preferred clothing occur more quickly than change of beliefs and values. This conceptualization implies acculturation is a unidimensional process.

Current conceptualization places acculturation within a bidimensional or multidimensional framework (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). A bidimensional framework defines acculturation along two distinct dimensions: (a) an individual's association with their culture of origin (e.g. Mexico) and (b) an individual's association with their receiving, or new culture (e.g. United States) (Berry, 2005; Schwartz et al., 2010). For example, Berry (2005) has developed a bidimensional theory of acculturation with four different outcomes: *assimilation,* loss of culture of origin and complete *integration* into new culture; integration, a combination of both new culture and culture of origin; *separation,* a rejection of new culture and retention of culture of origin; and *marginalization,* a rejection of both new culture and culture of origin. Integration is considered to be the most adaptive pathway of acculturation, whereas marginalization is considered to be the most maladaptive.

A multidimensional framework builds upon the bidimensional framework and offers a more nuanced view of acculturation (Schwartz et al., 2010). This framework proposes that cultural practices, cultural values, and cultural identifications are interrelated components of the acculturation process that should be examined comprehensively, rather than as separate constructs. Further, Schwartz et al. (2010) provides an explanation of how ethnicity, migrant type (e.g. refugee, immigrant), cultural similarity between culture of origin and receiving culture, and discrimination play a role in acculturation. Thus, the multidimensional framework adds complexity to understanding the acculturation process but does not discredit the bidimensional view of acculturation (Schwartz et al., 2010).

Within nursing and other health disciplines, there is evidence suggesting that acculturation affects health, as it has been studied in relation to a wide gamut of health behaviors and health outcomes among Hispanics (Lara et al., 2005). An increase in acculturation in Hispanic adults has been associated with poor diet, less physical activity, intimate partner violence, risky sexual behavior, and increased substance use (Abraído-Lanza, Chao, & Flórez, 2005; Gonzalez-Guarda, Florom-Smith, & Thomas, 2011;

Lara et al., 2005). Health outcomes such as low birth weight, obesity, depression, and anxiety have also been associated with increased acculturation among Hispanics (Lara et al., 2005; Shedlin, Decena, & Oliver-Velez, 2005). Although acculturation has been associated with obesity in adults, the relationship between acculturation and childhood obesity is unclear (Morello, Madanat, Crespo, Lemus, & Elder, 2012).

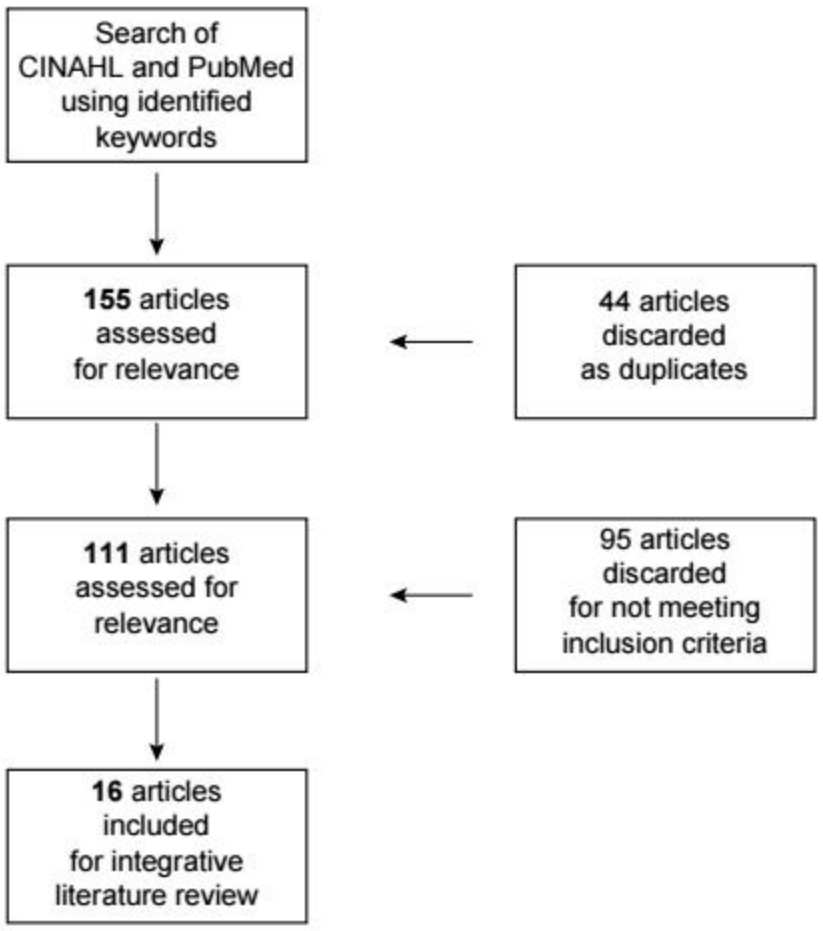
Further, the use of acculturation by various disciplines has led to a concept that is prolific in the literature yet often contradictory in its conceptualization, measurement, and effects on health (Hunt, Schneider, & Comer, 2004; Lara et al., 2005). Examining the concept within a specific population and health outcome may help in understanding the relationship between acculturation and childhood obesity. A focus on Hispanics allows an examination of variation within this broad, diverse ethnic group while still distinguishing the group from other ethnicities. Further, a focus on a specific health outcome, childhood obesity, places the concept of acculturation within a context in which it can be used to improve health outcomes.

Methods

An integrative literature review for concept development (Broome, 2000) was used to better understand the concept of acculturation in the context of childhood obesity. Concept development via this method necessitates an understanding of past research, including methodology and limitations. In addition, this method of concept development aims to discover which questions regarding the concept of interest remain unanswered (Broome, 2000). For a concept such as acculturation, which has evolved dramatically over time, an integrative literature review is the best way to understand its use as a whole concept within the literature (Broome, 2000). Questions that guided the first purpose of the review, clarifying the concept of acculturation, were: (a) How is acculturation conceptualized and operationalized?; (b) What are factors that influence the acculturation process?; (c) What beliefs, behaviors, and values change as a result of acculturation? The question that guided the second purpose of the review – understanding the relationship between parent acculturation and early childhood obesity – was: (d) How does acculturation impact early childhood obesity?

An important element in an integrative review for concept development is reviewing the rigor and methods of research and identifying which aspects of the concept need further examination (Broome, 2000). Studies are included or excluded based on criteria selected, and then coding is used in order to ensure rigor. For this integrative literature review, the electronic databases of CINAHL and PubMed were used, with search terms including "acculturation", "child obesity", and "childhood obesity". Ethnicity terms like "Hispanic" and "Latino" were purposefully excluded so as to avoid missing studies that include multiple ethnicities. There were a total of 155 results, with 111 results after duplicates. Ultimately, 16 articles met inclusion criteria for in-depth review published between 1992-2014 (Figure 1)

Figure 1. **Flow chart of literature selection**



The inclusion criteria were as follows: written in English; includes a Hispanic population 2 to 5 years old or parents of a child 2 to 5 years old; describes or defines acculturation in the context of childhood overweight or obesity. Studies were considered for use if they included participants aged 2 to 5 years, or participants older than 5 years but not yet adolescents (6-12 years). Ideally, all studies would sample participants aged 2-5 exclusively; however, the research available on this concept within this specific population is limited.

Excluded studies were those that mentioned the term acculturation only superficially and did not elaborate on its conceptualization, or measured acculturation by only one proxy measure (e.g. years in U.S., nativity, language) rather than use of a validated measure. Other reasons for excluding studies included: the research related to another health condition (e.g. oral health) or population (e.g. Asian Americans, adolescents).

Results

Sixteen articles published from 1992 to 2014 met inclusion criteria. A summary of articles included in this integrative review is presented in Table 1. The majority were quantitative research articles (*n*=14); the two remaining were a qualitative research article (n=1), and an integrative literature review (*n*=1). The frequency of Hispanic subgroups represented within the articles was: Mexicans (n=16); Central/South Americans (*n*=9); Puerto Ricans (*n*=3); Cubans (*n*=1); Spanish (*n*=1); and other (*n*=3). Results are presented according to the questions guiding this integrative literature review: (a) defining and measuring acculturation; (b) influences to the process of acculturation; (c) beliefs, behaviors, and values; and (d) acculturation and early childhood obesity. Then, results are integrated through an analysis of findings.

Table 1. **A summary of research on acculturation in the context of childhood obesity**

Author	Study type	Measure of acculturation[b]	Relationship between acculturation and childhood obesity[c,d]
Ariza, Chen, Binns, & Christoffel (2004)	Quantitative, cross-sectional	SASH	Null. Parent acculturation not associated with childhood obesity.
Barkin et al. (2012)	Quantitative, RCT[a]	SASH	Null. Parent acculturation not associated with childhood obesity.
Barroso, Roncancio, Hinojosa, & Reifsnider (2012)	Quantitative, cross-sectional	ARSMA	Null. Parent acculturation not associated with childhood obesity.
Duerksen et al. (2007)	Quantitative, cross-sectional	ARSMA II	Null. Parent acculturation not associated with childhood obesity.
Elder et al. (2010)	Quantitative, cross-sectional	ARSMA II	Less parent acculturation associated with child overweight.
Fuentes-Afflick & Hessol (2008)	Quantitative, longitudinal	Acculturation index score, self-reported degree of Americanization, birthplace, and years in U.S.	Increase in parent acculturation associated with child over weight.
Martinez et al. (2008)	Quantitative, cross-sectional	ARSMA II	Less parent acculturation associated with more walking to school.
Melgar-Quinonez & Kaiser (2004)	Quantitative, cross-sectional	BAS	Null. Parent acculturation not associated with childhood obesity.
Morello et al. (2012)	Quantitative, cross-sectional	SASH	Increase in parent acculturation associated with decrease fruit consumption.
Sherman et al. (1992)	Quantitative, cross-sectional	ARSMA	Null. Parent acculturation not associated with childhood obesity.
Sherman, Alexander, Dean, & Kim (1995)	Quantitative, cross-sectional	ARSMA	Null. Parent acculturation not associated with childhood obesity.
Starling Washington et al. (2010)	Quantitative, cross-sectional	ARSMA II	Null. Parent acculturation not associated with childhood obesity.
Sussner, Lindsay, Greaney, & Peterson (2008)	Qualitative, focus groups and in-depth interviews	SASH[e]	Increase in parent acculturation results in perceived changes: poorer diet quality, decrease in physical activity, and different eating practices and work schedules impacting available time for food preparation and breastfeeding. Also, changes to beliefs about food, child weight (e.g. child "fatness" is not healthy).
Villa-Caballero, Arredondo, Campbell, & Elder (2009)	Quantitative, cross-sectional	ARSMA II	Increase in parent acculturation marginally associated with child overweight.
Ward (2008)	Integrative literature review	ARSMA II, SASH, years in U.S.	Increase in parent acculturation associated with increase in child screen time. Also, some research with null findings.
Wiley et al. (2014)	Quantitative, cross-sectional	Brief ARSMA II	Increase in parent acculturation associated with child overweight and increase in 'noncore' food consumption.

a RCT = randomized control trial
b See Table 3 for detailed description of acculturation measures
c Also includes health behaviors related to childhood obesity, such as fruit consumption and walking.
d A null relationship indicates a nonsignificant statistical relationship between acculturation and childhood obesity, $p > .05$
e For descriptive statistics only.

Defining and Measuring Acculturation

Conceptualization. The concept of acculturation is one that has transformed over time. Table 2 displays various definitions of acculturation in the studies analyzed for the integrative literature review. Overall, there is general consensus among the uses without any major contradictions. For example, it is clear that all the conceptualizations referenced recognize that acculturation involves a change in one's culture of origin, and some uses mention the alteration of attitudes, values, and behaviors (Barroso et al., 2012; Fuentes-Afflick & Hessol, 2008; Villa-Caballero et al., 2009)

Table 2. **Uses of acculturation**

Source	Definition
Barroso et al., 2012	Adaptation of culture and values of a host country by an immigrant group, with an influence on health outcomes.
Fuentes-Afflick & Hessol, 2008	A multidimensional and dynamic process of change, reflects the "process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of a culture."
Sussner et al., 2008	The degree to which the majority culture is adopted by the minority culture.
Villa-Caballero et al., 2009	The process by which a migrant population is exposed to the influence of a dominant culture, causing changes in attitudes and behaviors.
Ward, 2008	The modification of an individual by adapting the attributes of another culture as a result of exposure to this culture.
Wiley et al., 2014	A measure of "the phenomena that result when groups of individuals having different cultures come into continuous first hand contact, with subsequent changes in the original cultural patterns of either or both groups."

However, some definitions are more clear in their conceptualization than others. Wiley and colleagues (2014) reference the classic Redfield, Linton, and Herskovits (1936) definition, whereas Sussner and colleagues (2008) describe acculturation simply as "the degree to which the majority culture is adopted by the minority culture" (p. 498). The latter definition assumes that an immigrant is migrating into a community in which the immigrant is a member of a minority population. In consideration of the Hispanic population immigrating to the U.S., this is not necessarily true as there are large concentrations of Hispanic subgroups in many areas of the U.S. (e.g. California, Florida, Texas), and the immigrant may be migrating to an ethnic enclave, where they are a member of a majority, rather than minority, group (Portes & Rumbaut, 2006). Although some of the studies used bicultural measurements in acculturation's operationalization (n = 7), none of the uses referred to a bidimensional process in which individuals undergoing acculturation maintain some of their values, beliefs, and behaviors from their culture of origin, also known as biculturalism (see also Table 1, Table 3; Berry, 1997; Szapocznik, Kurtines, & Fernandez, 1980). Also, it should be mentioned that less than half of all studies (n = 6) reviewed even included an explicit definition for acculturation.

Operationalization. The population of concern for this integrative literature review, early childhood, presents a unique consideration because the acculturation in this integrative literature review was operationalized by parent acculturation rather than child

acculturation, with the majority focused on the mother rather than the father (e.g. Ariza et al., 2004; Barkin et al., 2012; Barroso et al., 2012; Sherman et al., 1995).
Table 3 summarizes the various measures of acculturation that were used throughout the research articles. There are various validated measures for examining acculturation in the Hispanic population. Some are specific to a subgroup like Mexican Americans, such as the Acculturation Rating Scale for Mexican Americans I (ARSMA), the Acculturation Rating Scale for Mexican Americans II (ARSMA- II), and the Brief Acculturation Scale for Mexican Americans (Bauman, 2005; Cuellar, Harris, & Jasso, 1980; Cuellar, Arnold, & Maldonado, 1995). One study used the Brief Acculturation Scale for Mexican Americans and validated the measure among a predominately Puerto Rican sample, resulting in two new factors: the Hispanic Orientation Scale and the U.S. Mainland Orientation Scale (Wiley et al., 2014). This demonstrates the potential malleability of these measures to different Hispanic subgroups. The ARSMA, ARSMAII, and Brief Acculturation Scale for Mexican Americans were used in (n=10) studies (Table 1). Other measures are more generalizable across Hispanic subgroups, such as the Short Acculturation Scale for Hispanics (SASH) (Marin, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987) and the Bidimensional Acculturation Scale (BAS) (Marin & Gamba, 1996). These scales were used in (n=6) of the studies (Table 1).

Table 3. **Empirical Referents**

Name	Description	Psychometric properties
Acculturation Rating Scale for Mexican Americans (ARSMA) (Cuellar et al., 1980)	20 items, measures language use, ethnic identity, ethnic interaction, and generation. Unidimensional measure.	***Validity:*** Construct validity established with (*n*=222) Mexican American psychiatric inpatients and hospital staff. ***Reliability:*** Cronbach's alpha=.81-.92[a]
Acculturation Rating Scale for Mexican Americans II (ARSMA-II) (Cuellar et al., 1995)	30 items, measures language use, media use, ethnic identity, ethnic interaction, and generation. Bidimensional measure.	***Validity:*** Construct validity established with sample of (n=379) individuals ranging from 1st – 5th generation. ***Reliability:*** Cronbach's alpha Anglo orientation scale= .86 Cronbach's alpha Mexican orientation scale= .88
Brief Acculturation Rating Scale for Mexican Americans II (ARSMA-II) (Bauman, 2005)	12 items, derived from ARSMA-II. Bidimensional measure.	***Validity:*** Construct validity established with (*n*=408) elementary and middle school youth. ***Reliability:*** Cronbach's alpha Anglo orientation scale= .73 Cronbach's alpha Mexican orientation scale= .91
Short Acculturation Scale for Hispanics (SASH) (Marín et al., 1987)	12 items, measures language use, media use, and ethnic social relations. Unidimensional measure.	***Validity:*** Construct validity established with (n=363) Hispanics and (n=228) non-Hispanics. External validity established, scale correlation with generation (r= .65, p<.001) and years in U.S. (r= .70, p<.001) ***Reliability:*** Cronbach's alpha= .92
Bicultural Acculturation Scale (BAS) (Marín & Gamba, 1996) domain= .94	24 items, measures language use, language proficiency, and media use. Bidimensional measure.	Validity: Construct validity established with (n=254) Hispanic adults. Reliability: Cronbach's alpha non-Hispanic Cronbach's alpha Hispanic domain= .87

[a] Ponterotto, Casas, Suzuki, & Alexander (2009)

Also, it is important to recognize that the ARSMA and SASH are unidimensional measures; essentially, they measure how much the individual has assimilated to the dominant culture (Lara et al., 2005). However, the BAS, ARSMA-II, and Brief Acculturation Scale for Mexican Americans are bidimensional measures; these take into account a combination of adapting to the dominant culture while also retaining aspects of Hispanic culture (Lara et al., 2005). Therefore, the latter measures better capture a bicultural approach to acculturation, as preferred by acculturation scholars (Berry, 1997; Schwartz et al., 2010).

Although these are the validated measures found in the studies used for this integrative literature review (Table 3), research that looks at the relationship between acculturation and obesity may need to add other aspects to capture cultural change. For example, current validated measures of acculturation largely rely on items surrounding language (Lara et al., 2005; Marin & Gamba, 1996). Measures that are specific to dietary and physical activity beliefs, behaviors, and values were suggested by studies included in this review to be created or added to existing validated instruments (Ariza et al., 2004; Fuentes-Afflick & Hessol, 2008).

Influences on the process of acculturation.

Influences on the process of acculturation are essential to recognize. These influences may also be referred to as contextual factors, or the setting where acculturation is taking place (Schwartz et al., 2010), which largely influence the process of acculturation and its relationship to childhood obesity in early childhood. These can include proximal influences, from within the individual and family, such as child/parent weight status, family dynamics, and parenting behaviors related to diet and physical activity (Barroso et al., 2012; Elder et al., 2010; Starling Washington et al., 2010). Distal factors such as environmental and social influences may include length of time in the U.S. (U.S.-born vs. foreign-born), SES of the neighborhood, and potential discrimination from the community (Duerksen et al., 2007; Elder et al., 2010; Sussner et al., 2008; Portes & Rumbaut, 2006; Ward, 2008). Because they represent a broad spectrum, contextual factors are difficult to measure in their entirety (Schwartz et al., 2010), but they relate well to an ecological perspective that considers the myriad of influences in the acculturation process (Bronfenbrenner, 2005).

Hispanics are a heterogeneous ethnic group; moreover, the physical environments in which acculturation takes place throughout the United States vary on numerous levels including, but not limited to: SES, geography, climate, and predominant culture. Several studies included in this review focused on Mexican American samples in San Diego (Duerksen et al., 2007; Elder et al., 2010; Morello et al., 2012), an environment that is starkly different from that of Chicago (Ariza et al., 2004). Another study took place in Boston with a predominately Puerto Rican sample (Sussner et al., 2008), with an urban environment similar to Chicago's. These characteristics are all crucial to understanding the environment in which acculturation occurs.

It is also important to examine acculturation among Hispanic children from the perspective of diet and physical activity. A qualitative study examining Latina immigrant mothers in Boston explained in great detail the process of adaptation to a new environment (Sussner et al., 2008). Adapting to a new food environment for these participants included larger portion sizes and more frequent access to processed, non-nutritive foods. In addition, adaptation to a new physical environment resulted in less ability to walk due to climate differences and issues of neighborhood safety. Finally, a change in environment sometimes led to a decrease in social support and feelings of social isolation, particularly if the participant had moved without family or friends (Sussner et al., 2008). Many of the quantitative studies included measurement of sociodemographic characteristics (Duerksen et al., 2007; Villa-Caballero, Arredondo, Campbell, & Elder, 2009), which may aim to illustrate the environment in which the sample lived. These characteristics can be considered and potentially controlled for in data analysis in quantitative research and explored in depth within qualitative research to gain a better understanding of influences to the acculturation process (Rudmin, 2009)

Beliefs, behaviors, and values

Eventually, the process of acculturation leads to an alteration in one's original patterns of values, beliefs, and behaviors (Berry, 2005). It is important to note that none of the articles paid particular attention to values in the context of early childhood obesity. Rather, there was more of a focus on beliefs and behaviors related to childhood obesity (i.e. diet, physical activity).

A few beliefs underwent change. In one study, acculturation was associated with a change regarding beliefs about "fat babies." Hispanic immigrant women stated that in their native country "fat babies" were thought to be healthy, but that over time their views began to shift, and this shift in views was vehemently rejected by family members (Sussner et al., 2008). Similarly, the beliefs regarding the perception of child weight came up as a recommended addition to parent acculturation measures in some of the studies (Ariza et al., 2004; Fuentes-Afflick & Hessol, 2008; Morello et al., 2012). It is possible that perception of child weight may influence child feeding practices (Melgar-Quinonez & Kaiser, 2004). Child feeding practices, either very strict or lenient, have been shown to be a factor in predicting childhood obesity (Fisher & Birch, 1999; Klesges et al., 1983)

Some behaviors that were examined were: consumption of fruits and vegetables, fast food consumption, and participation in physically active transportation (Duerksen et al., 2007; Martinez, Ayala, Arredondo, Finch, & Elder, 2008; Morello et al., 2012). One study found that a child's fruit consumption, but not vegetable consumption, was significantly associated with parent acculturation. This suggests that as parent acculturation increases, children's consumption of fruit decreases (Morello et al., 2012). Examination of dietary patterns was examined through acculturation's relationship to restaurant choice. For example, one study found that fast food restaurants were the preferred restaurant venue for those who were more highly acculturated, yet there was no

significant relationship found between acculturation and child weight status (Duerksen et al., 2007).

Another study examined the relationship between acculturation and physically active transportation, such as walking (Martinez et al., 2008). There was generally more vehicle transportation among acculturated families, whereas low-acculturated families had more active transportation, such as walking. The various behaviors examined among the studies indicate a need to understand a wide range of health behaviors that may contribute to the relationship between acculturation and early childhood obesity.

Acculturation and early childhood obesity

The effects of acculturation on early childhood obesity were disparate. Three different types emerged and were categorized accordingly. First, some of the outcomes fit the 'acculturation hypothesis,' which posits that health deteriorates over time as an individual acculturates to U.S. culture (Abraído-Lanza, Chao, & Florez, 2005), as found in (n=7) of the studies included in this integrative review (Fuentes-Afflick & Hessol, 2008; Martinez, Ayala, Arredondo, Finch, & Elder, 2008; Morello, Madanat, Crespo, Lemus, & Elder, 2012; Sussner, Lindsay, Greaney, & Peterson, 2008; Villa-Caballero, Arredondo, Campbell, & Elder, 2009; Wiley et al., 2014). However, there was a predominate "null" category (n= 9), which denotes a nonsignificant relationship between acculturation and childhood obesity (Ariza, Chen, Binns, & Christoffel, 2004; Barkin, et al., 2012; Barroso, Roncancio, Hinojosa, & Reifsnider, 2012; Duerksen et al., 2007; Melgar-Quiñonez & Kaiser, 2004; Sherman, Alexander, Clark, Dean, & Welter, 1992; Sherman, Alexander, Dean, & Kim, 1995; Starling Washington, Reifsnider, Bishop, Domingeaux Ethington, & Ruffin, 2010; Ward, 2008). Finally, the "other" category (n= 2) refers to studies that found a significant relationship between acculturation and childhood obesity but contradicted the 'acculturation hypothesis' (Elder et al., 2010; Sussner et al., 2008). For example, one study found that low parent acculturation was associated with child overweight (Elder et al., 2010), which is the opposite relationship of the 'acculturation hypothesis.' Only two studies – the integrative literature review by Ward (2008) and the qualitative study by Sussner et al. (2008) – were placed in more than one category given the complex nature of their findings. The integrative literature review synthesized findings from various studies (Ward, 2008), while the findings of Sussner et al. (2008) predominately fit into the 'acculturation hypothesis' category (e.g. less physical activity) except for one finding that was placed in the "other" category (the changing perception of child weight).

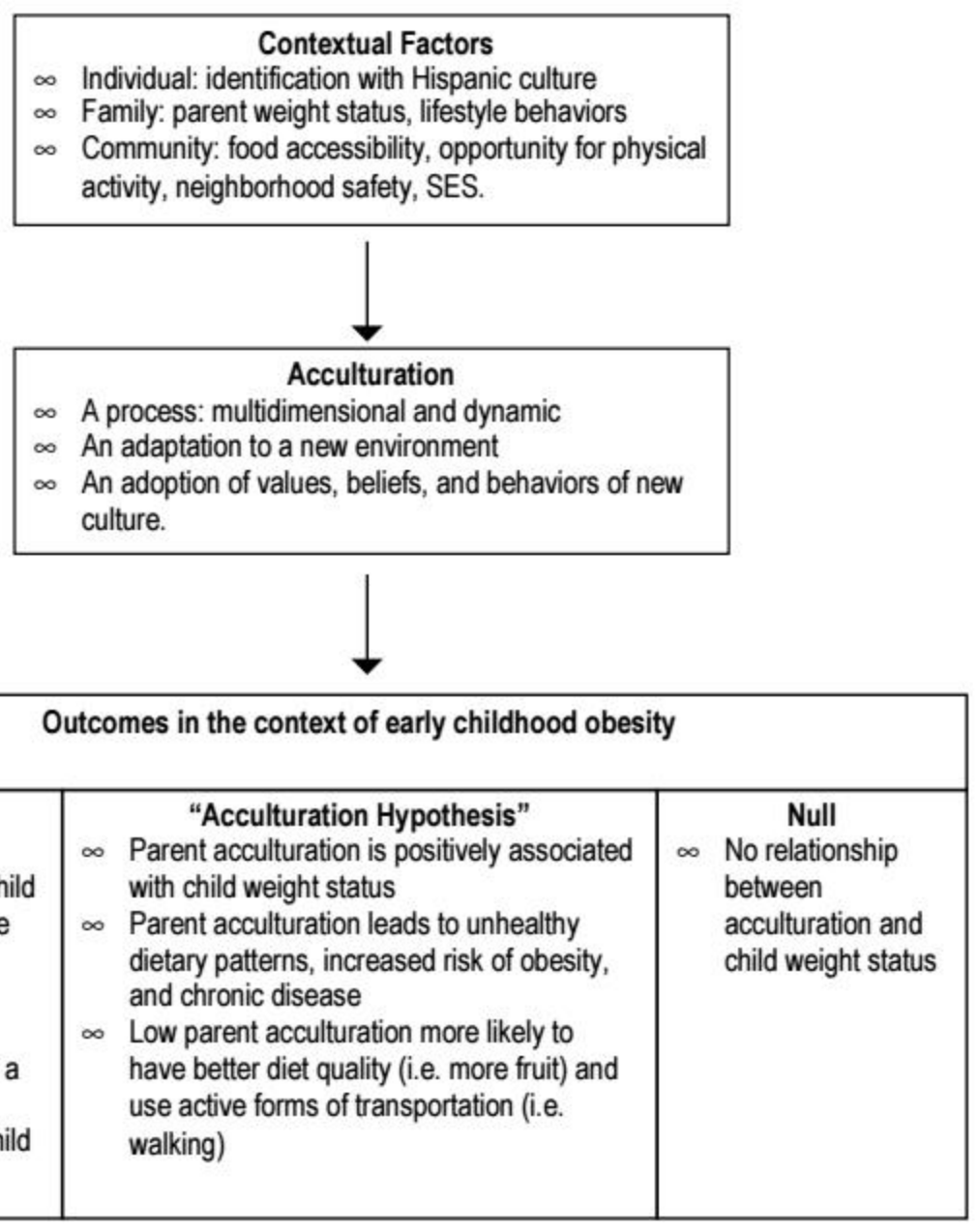
The inconsistency in consequences of acculturation is not unexpected, as previous research among Hispanics has demonstrated similar results (Hunt et al., 2004; Lara et al., 2005). Examining the concept of acculturation in the context of childhood obesity in early childhood, however, affords the opportunity to look more closely at the minute differences between research studies for this particular population.
Differing countries of origin may be one reason for disparate results. All studies examined (n = 16) included Mexican Americans, while other Hispanic subgroups

were studied much less in comparison (e.g. Cuba [n=1]; Wiley et al., 2014). Other ethnicities studied were often vague. For example, placing Central/South Americans or non-Mexican Americans together in one category (e.g. Fuentes-Afflick & Hessol, 2008; Morello et al., 2012; Villa-Caballero et al., 2009) is somewhat arbitrary as there are many countries and cultures within those two regions, and important qualitative differences may be missed regarding culture and the acculturation process (Schwartz et al., 2010). This presents an issue when comparing the trajectory and relationship between acculturation and childhood obesity. The contradictory outcomes indicate that the concept of acculturation in the context of childhood obesity in early childhood is a concept that has not yet been fully developed.

Analysis

An integration of the findings is illustrated in Figure 2 based on the results of the studies included for this review. In addition to summarizing the conceptualization of acculturation (see also Table 2), the figure highlights the contextual factors influencing the relationship between acculturation and early childhood obesity, ranging from the individual (proximal) to the community (distal) level (Schwartz et al., 2010). This range of influence aims to concurrently identify proximal to distal factors embedded within the process of acculturation as it relates to childhood obesity (Bronfenbrenner, 2005; Davison & Birch, 2001).

Figure 2. **Acculturation in the context of early childhood obesity**



Foremost, at the individual level an initial identification with Hispanic culture or Hispanic subculture is necessary in order for an individual to experience the process of acculturation from a Hispanic culture to aspects of a different culture; all studies included in this review used a sample identifying as Hispanic. Within the family, parent physical characteristics are important to consider as contextual factors. The positive relationship between parent weight status and child weight status (Barroso et al., 2012; Starling Washington et al., 2010), suggests that the parent's initial weight status before acculturation is extremely important to consider. If parent weight status is already overweight or obese prior to acculturation, there may be a nonsignificant relationship between acculturation and early childhood obesity, as was found by many of the studies in this review (see also Table 1). Furthermore, if parents are already accustomed to consuming high quantities of processed and fast food before acculturation, then the relationship between acculturation and childhood obesity may be weakened or null. This could explain the null relationship found for restaurant choice (fast-food vs. traditional Mexican restaurants) by Duerksen et al. (2007).

The neighborhood and community influences, while more distal, are also salient influences to recognize. For example, access to and availability of fresh food and physical activity opportunities are crucial in health-promoting behaviors, as indicated by Martinez et al., (2008) and Sussner et al. (2008). Additionally, characteristics such as neighborhood safety and socioeconomic status (SES) are significant (Elder et al., 2010).

Low SES has been associated with a higher risk of childhood obesity (Wang, 2001). Within communities of low SES, it is important to note that the resources for these individuals and groups tend to be limited. Availability of fresh fruits and vegetables may be inadequate and neighborhoods unsafe, preventing healthy dietary patterns and physical activity (Martinez et al., 2008; Sussner et al., 2008). As a result, it appears extremely important to differentiate effects of SES on early childhood obesity and effects of acculturation on childhood obesity (Rudmin, 2009). For example, one study found a significant relationship between low parent acculturation and childhood overweight even after controlling for SES, albeit an unexpected relationship (Elder et al., 2010).

The figure presented is an integration of findings from this integrative literature review. As research develops, the figure can be revised to reflect the most recent knowledge regarding acculturation in the context of childhood obesity.

Limitations and future studies

This integrative literature review for concept development furthers the understanding of acculturation through focus on the Hispanic population within a specific health outcome, childhood obesity. However, it is not without limitations. Going forward, nurse scientists should continue to clarify the concept of acculturation in the context of childhood obesity, while bearing in mind the following limitations and unanswered questions:

First, acculturation as a concept is not clearly conceptualized within the literature, as most studies (n= 10) within this review did not even define acculturation (Table 2). In order to improve the clarity of the concept and its relationship to childhood obesity, future research should include a bidimensional or multidimensional conceptualization that may be utilized across nursing and other health and social science disciplines (e.g. Berry, 1997, Schwartz et al., 2010).

Second, the operationalization of acculturation poses many methodological challenges. This review included five measures of acculturation, with only three of those being bidimensional measures (Table 3). As the bidimensional, or multidimensional, view of acculturation is the current accepted conceptualization of acculturation (Berry, 1997; Schwartz et al., 2010), it is unfortunate that many studies chose to utilize a unidimensional measure (Table 1, Table 3). Also, even those measures that are bidimensional may need to be adapted to capture changes in dietary and physical activity behaviors, beliefs, and practices (Morello et al., 2012).

The next limitation relates to other methodological issues. The majority of studies included were quantitative, cross-sectional studies, which neglects the dynamic attribute of acculturation. Future studies should include a prospective research design when possible. It may also be prudent for future research to focus towards qualitative and/or mixed methods.. For example, the qualitative study included in this review provided robust and important findings related to mothers' experience with acculturation and its influence on dietary and physical activity behaviors and beliefs (Sussner et al., 2008).

Further, while it is known that Hispanics are a diverse ethnic group, in the majority of these studies, Mexican American samples predominated. This can be viewed as a strength in that the population has been well studied, but it is a limitation in that the perspectives of other Hispanic subgroups are not represented. Therefore, there is limited generalization that can be inferred. Although dependent on setting (e.g. urban/ rural, percentage of population Hispanic), future research should include diverse Hispanic samples whenever possible.

The decision to focus to the developmental period of early childhood was useful in terms of generating a unique understanding for this particular age group, but greatly delimited the amount of available literature. In future integrative literature reviews and systematic reviews, it will be important to see whether the relationship between acculturation and childhood obesity produces similarly disparate results among Hispanics in middle childhood and adolescence.

Finally, this integrative literature review did not come to a consensus in understanding the relationship between acculturation and childhood obesity. In fact, the majority of studies found a null, or nonsignificant relationship between acculturation and childhood obesity. Although this appears to undermine the role of the concept in relation to

childhood obesity, there were several studies that did find a relationship (Table 1). As a result, nurses can avail of limited clinical and practice implications until the relationship between acculturation and childhood obesity is better delineated.
However, this does present important opportunities for nurse scientists. Nurse scientists should continue to examine the role of acculturation in research related to childhood obesity; doing so will concurrently advance the science of both acculturation and childhood obesity. This research should include clear conceptualization of acculturation, bidimensional operationalization, diverse Hispanic samples, and varying methodologies as appropriate. Ultimately, this can lead to clearer theoretical and operational knowledge surrounding the concept of acculturation.

Conclusion

This integrative literature review for concept development identified 16 articles relevant to clarifying the concept of acculturation and understanding the relationship between parent acculturation and early childhood obesity among Hispanics. The first key finding of this study is that acculturation continues to vary conceptually and operationally in the literature. Next, contextual factors, the setting where acculturation occurs, are vital in understanding the acculturation process in relation to health outcomes such as childhood obesity. Third, dietary and physical activity behaviors and weight-related beliefs may change as a result of acculturation. Finally, the relationship between acculturation and childhood obesity remains unclear. This is because (n=7) studies found a relationship between increased parent acculturation and early childhood obesity ('acculturation hypothesis'), (n= 9) studies found a null, or nonsignificant relationship between parent acculturation and early childhood obesity, and (n= 2) 'other' studies found relationships between parent acculturation and early childhood obesity that contradicted the 'acculturation hypothesis' category.

The findings of this study suggest that acculturation plays a potential role in the development of childhood obesity among Hispanics in early childhood, but it is presumptuous to suggest a known effect. Nevertheless, acculturation is a concept that cannot be avoided in the overall context of Hispanic health or within specific health contexts such as childhood obesity. Additionally, early childhood is an important developmental period in which primary and secondary interventions can help prevent the long-term effects of obesity. The results of this integrative literature review should facilitate more research on this topic by building on the strengths of the studies used in analysis and learning from their weaknesses. Results of future research have the potential to guide future obesity intervention efforts with Hispanic children in early childhood. As the cultural and ethnic landscape of the United States continues to develop, further examination of acculturation in the context of early childhood obesity is necessary in order to provide culturally competent health care to the growing Hispanic population.

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Examining the development and validation of the Berlin Questionnaire for obstructive sleep apnea screening in older adults

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Abstract

Obstructive sleep apnea (OSA) is a common sleep disorder that affects a larger proportion of the older adult population than the young and middle adult population. The gold standard for identifying OSA, overnight polysomnography (PSG), is expensive and time consuming. The Berlin Questionnaire was developed to offer a screening tool for OSA that is accessible, easy-to-deliver, and cheap. Validation of the Berlin Questionnaire found the tool sensitive, specific, and reliable in primary care populations, but validation research was less compelling in sleep clinics. Both populations used middle-aged participants, which cannot account for the unique differences in an older adult (> 65 years) population, e.g. higher prevalence of OSA, more comorbidities, and non-applicability of questions for some older adults. When the Berlin Questionnaire was assessed in those aged > 65 years, sensitivity was on par with previous research, but specificity was poor at 39.3%, suggesting the Berlin Questionnaire is not accurate among older adults (it is unable to sufficiently detect older adults without OSA). While the questionnaire may do a reasonable job of capturing older patients with OSA, the low specificity would likely lead to advising many patients without OSA to undergo a PSG study, thus increasing health care costs. Modification of the Berlin Questionnaire may be needed in order for it to be valid in the older adult population.

Obstructive sleep apnea (OSA) is a common sleep disorder that affects between 2% and 5% of the population, and even as high as 81% among older adults (Ahmadi, Chung, Gibbs, & Shapiro, 2008; Ancoli-Israel, Kripke, Klauber, Mason, Fell, & Kaplan, 1991). OSA is characterized by excessive daytime sleepiness, repeated episodes of apnea during sleep, nocturnal hypoxemia, and snoring. The risk for injury increases fourfold when excessive daytime sleepiness, poor sleep quality, and inadequate sleep time are reported, making the consequences of OSA significant (Chen & Wu, 2010). Appropriate diagnosis and treatment of OSA is paramount to preventing detrimental sequelae, such as sleep-related injuries. The gold standard for assessing for OSA is overnight polysomnography (PSG), where multiple respiratory variables and oxygen saturation are monitored (Ahmadi et al., 2008). However, this requires an evaluation in a sleep lab, which is labor-intensive, time consuming, and expensive. For these reasons,

many patients are unable to obtain a PSG evaluation for diagnosis of OSA. In response to the need for a clinical screening tool for OSA that could be readily accessible, efficient, and inexpensive, the Berlin Questionnaire was developed. The purpose of this review is to examine the development and validation of the Berlin Questionnaire, particularly as it pertains to the older adult population.

Development

The Berlin questionnaire was developed in 1996 at the Conference on Sleep in Primary Care. In Berlin, Germany, 120 primary care physicians and pulmonologists gathered and reached a consensus on an instrument that focused on a narrow set of known risk factors for OSA (Netzer, Stoohs, Netzer, Clark, & Strohl, 1999).

Questions for the Berlin Questionnaire were drawn from the literature. Features or behaviors that have consistently shown to predict the presence of OSA across multiple studies were extracted. The outcome was a 10-question instrument consisting of five questions on snoring, three questions concerning daytime sleepiness, one question on sleepiness while driving a vehicle, and one question on the presence of high blood pressure. Participants are also asked to provide information about age, height, weight, gender, ethnicity, and neck circumference (Netzer et al., 1999).

In order to make recognition of OSA easier, the 10 questions selected for inclusion in the instrument were arranged into three symptom categories, based on the published efficacy of a grouping strategy used in community surveys. The three categories were then assigned criteria for determining risk. Category one, with questions regarding snoring, was designated high-risk if responses to at least two of the five questions pointed to symptoms persisting more than 3-4 times a week. Category two was defined as high-risk if responses to any questions regarding daytime sleepiness or drowsy driving indicated its presence more than 3-4 times per week. Category three, the one question on blood pressure, was classified as high-risk if the response was yes to hypertension. Hypertension was classified as greater than 140 mm Hg systolic or greater than 90 mm Hg diastolic, according to the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure VI (Sharma, Vasudev, Sinha, Banga, Pandey & Handa, 2006). A body mass index of 30 kg/m^2 was also considered high-risk. If participants were classified as high-risk in two different categories, then they were to be considered high-risk for OSA. Those without persistent symptoms or those with a positive finding for only one category would be classified as low-risk (Netzer et al., 1999).

Validation

Initial validation

The first article on the Berlin Questionnaire was published three years after its development, by Netzer et al. (1999). It sought to determine the utility of the instrument in identifying patients with OSA in primary care settings. In the study, 1,008 questionnaires were distributed evenly across five primary care practices in

the Cleveland, Ohio area. Returned questionnaires were included in the analysis if they were submitted to the sleep center within three weeks of distribution. Twenty percent of respondents underwent portable PSG sleep studies to assess for respiratory disturbances, where oronasal airflow, chest wall movement, oxygen saturation, and heart rate were measured and a respiratory disturbance index (RDI) was calculated. Data were quantitatively analyzed with descriptive statistics, chi squares, Pearson correlations, and logistic regression (Netzer et al.,1999).

There were 744 questionnaires analyzed; a little over half of the participants were female (54.2%), the mean age was 48.9 years (SD ± 17.5), and the mean BMI was 29 (SD ± 7.2). More than 37% of this outpatient population reported the presence of risk factors and behaviors indicative of OSA. Approximately a third of the respondents reported feeling unrested after a night's sleep (33.8%) and daytime sleepiness (38.8%) at least 3-4 times a week. Nineteen percent of respondents reported they had fallen asleep while driving, and 4.4% stated this occurred at least 3-4 times a week. (Netzer et al., 1999).

The reliability among individual questions within the categories on the questionnaire was measured by internal consistency and represented by Cronbach α values, where higher values indicate greater internal consistency reliability (Waltz, Strickland, & Lenz, 2010). The Cronbach α value for category one was excellent at 0.92, but poor for category two at 0.63 (Netzer et al., 1999). When the question regarding sleepiness behind the wheel was removed, the Cronbach α for category two improved to 0.86. Despite this, the question about sleepiness behind the wheel remains on the questionnaire (Netzer et al., 1999).

The respiratory disturbance index (RDI) was used for determining the precision and accuracy of the measurement tool, i.e. the ability to predict the risk group and symptom category accurately. RDI was defined as the number of respiratory events per hour in bed. Based on prior studies, cutoff values were set at less than or equal to 5, more than 15, and more than 30. Precision of the instrument is reflected through sensitivity, while accuracy is reflected through specificity (Waltz et al., 2010). The sensitivity of the Berlin Questionnaire, or the extent to which the tool can detect changes in the measured symptom, was found to be 86% for an RDI greater than five. The mean RDI for the high-risk group was 21 and the mean in the low-risk group was 4.7. If a patient was deemed low risk, meaning that he or she qualified for fewer than two risk categories, then there was a strong likelihood that the patient had an RDI of 5 or less, which put the post-test probability at 70%. Likewise, the high-risk patients were far more likely to meet the criteria for OSA by having an RDI of greater than 5, with a post-test probability of 85%. Risk grouping was more predictive of RDI than symptom category was. The predictive ability for symptom category one was better than for category three, and category two had the lowest predictive ability for OSA. The corresponding post-test probabilities for the categories were 78%, 70%, and 63%, respectively. In the end, the

best predictor of having an RDI greater than 5 was the high-risk group, with a sensitivity of 0.86 and a specificity of 0.77 (Netzer et al., 1999).

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Additional validation

The Berlin Questionnaire gained rapid acceptance as a screening tool for OSA in primary care settings after the results published by Netzer et al (1999). While there was an initial letter to the editor questioning the accuracy of the sensitivity and specificity of the Berlin Questionnaire, subsequent research on the validity of the instrument came years later. In 2008, Ahmadi et al. re-evaluated the questionnaire in the sleep clinic population. In a retrospective chart review, they looked at 130 patients who were referred to a sleep physician in Toronto, Canada for sleepiness/poor sleep and had two overnight PSGs. Patients were given the Berlin Questionnaire, as well as four other questionnaires. Statistical analysis involved Spearman's rank-order correlation coefficient to determine the relationship between the Berlin Questionnaire and RDI. This analysis was also used to estimate the correlation between RDI and BMI, RDI and neck circumference, and RDI and age (Ahmadi et al., 2008).

The Berlin Questionnaire identified 58.5% of patients as being high-risk for OSA and 41.5% as low-risk for OSA. The sensitivity and specificity were calculated at different RDI cut-offs. Sensitivity ranged from 0.57, for an RDI greater than 5, to 0.68, for an RDI of greater than 15. Specificity ranged from 0.41, for an RDI greater than 15, to 0.49, for an RDI greater than 5. Overall, sensitivity was low, and specificity was moderate (Ahmadi et al., 2008).

When looking at the association between RDI and the Berlin Questionnaire, results were disappointing. Overall, there was a 47.7% agreement between the questionnaire and RDI for risk classification. The Spearman's correlation showed only a fair correlation between RDI and symptom category one (r=0.331) and no correlation between RDI and category two (r=-0.105). There were also large numbers of false positives (50%) and false negatives (22%) found when using the Berlin Questionnaire as a screening tool for OSA. These findings suggested that the instrument was not adequate in identifying patients with OSA in the sleep clinic population (Ahmadi et al., 2008).

Variations

There are some variations to the Berlin questionnaire. One minor variation is that in some instances researchers do not ask participants for their ethnicity and neck circumference (Chung et al., 2008). Furthermore, the questionnaire has been translated into other languages: German, Hindi, Portuguese, and Spanish (Netzer, Hoegel, Loube, Netzer, Hay, Alvarez-Sala, & Strohl, 2003; Romero-López, Ochoa-Vázquez, Mata-Marín, Ochoa-Jiménez, & Rico-Méndez, 2011; Sharma, Vasudev, Sinha, Banga, Pandey & Handa, 2006; Vaz, Drummond, Motaa, Severoc, Almeidaa, & Winck, 2011). There has also been an evaluation of a shorter version of the instrument, in which only items one, two, three, five, and ten are retained (Ahmadi et al., 2008). However, in all cases, the mean ages of these samples were 55 years or less (55, 51, 55, 40, 51, and 51 years, respectively).

Older Adults

Despite the findings by Ahmadi et al. (2008) the Berlin Questionnaire has persisted as the most widely used OSA screening tool, including among the elderly. However, the Berlin Questionnaire has not been validated in an older population. Older adults have a higher prevalence of OSA and also more comorbidities. OSA occurs in 45%–65% of older adults, compared to 4%–9% in peopled aged 30 to 60 (Bassetti, 2011; Garcia, 2008; Johnson & Johnson, 2010). The two aforementioned validation studies had a mean age of 48.9 and 43.7 years among participants (Ahmadi et al., 2008; Netzer et al., 1999). Since validation is used to demonstrate how well an instrument is measuring what it is intended to measure, the different clinical profile of older adults can alter the validity of the questionnaire in this population. For example, the question pertaining to hypertension is more likely to be scored as a point earned among older adults, but without validating the Berlin Questionnaire in the older population, the Berlin Score may be artificially increased, thereby increasing the perceived OSA risk. Also, the question about falling asleep while driving may not apply to all older adults, since many older adults reduce or cease driving. More recently, the Berlin Questionnaire was explored in the aging population. A sample of 643 participants aged 65 years old underwent an at-home overnight PSG and were administered the Berlin Questionnaire (Sforza, Chouchou, Pichot, Herrmann, Barthelemy, & Roche, 2011).

The Berlin Questionnaire identified 31.4% of the participants as high-risk. This high-risk group had a higher prevalence of obesity, hypertension, snoring time, and more

severe nighttime hypoxemia. Using the cutoff of greater than 15 apnea-hypopnea events, which can be considered equivalent to the RDI used in the other two studies, the questionnaire showed a sensitivity of 76.7% and a specificity of 39.3%. The questionnaire was able to correctly classify 61.6% of the population and could explain 4.3% of the variance in apnea-hypopnea events. Of the three categories on the questionnaire, the first category was found to be the most sensitive (63.4%) and specific (58.8%), which is the category that assesses snoring (Sforza et al., 2011). See Table 1 for study comparisons.

In order to assess the Berlin Questionnaire in the context of cognitive function, the mini mental status examination (MMSE) was applied to exclude those with a MMSE score less than 27. There were 590 patients used for this analysis, and the results were essentially the same with a sensitivity and specificity of 76.3% and 38.9%, respectively. This indicated that the accuracy of the Berlin Questionnaire was not affected by cognitive function; however, the overall findings did not suggest that the instrument was a satisfactory screening tool for the aging population (Sforza et al., 2011).

Table 1. **Summary of early validation studies for the Berlin Questionnaire**

Author, year	Population	Mean Age (yrs)	Sensitivity	Specificity
Netzer et al., 1999	Primary Care	48.9	86% RDI > 5	77% RDI > 5
Ahmadi et al., 2008	Sleep Clinics	43.7	57% RDI > 5 68% RDI > 15	49% RDI > 5 41% RDI > 15
Sforza et al., 2011	Older adults	> 65	76.7% AHI > 15	39.3% AHI > 15

Conclusion

Obstructive sleep apnea is a common sleep disorder that impedes daytime functioning and increases the risk for injury. Due to the expense, accessibility, and time constraints of the gold standard PSG screening tool for OSA, the Berlin Questionnaire emerged as a solution for readily available OSA screening. The first article describing its development and validity was published in 1999; in 2008 an article re-examining its utility in the sleep clinic population revealed less impressive results. When studied in the older adult population, the sensitivity and specificity was improved from the 2008 article yet was still unable to discriminate patients with and without OSA accurately. While the Berlin Questionnaire has made improvements in the field of OSA screening, use of this instrument in the older population appears to have a high false positive rate. Although low specificity may seem to be a minor disadvantage compared to the importance of sensitivity, it could drive up health care costs and defeat the purpose of having an efficient and inexpensive tool that can screen for OSA. This means the odds of capturing older patients with OSA are good, but the low specificity will lead to advising many patients without OSA to get a PSG study. This may, in part, be due to older adults earning points on the Berlin Questionnaire that are age-related (i.e.

hypertension) or inappropriate for this population (i.e. driving). Thus, further work needs to be done to improve this instrument's validity among older adults, particularly improving its accuracy in identifying those with and without OSA.

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Application of the Theory of Moral Reckoning in Nursing

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Abstract

Background: Moral distress is a major factor contributing to stress and burnout in nursing. The critical care nurse and Advanced Practice Nurse (APN) are prone to internal conflict, self-doubt, and the development of moral distress due to the acuity of their patient population and the differing opinions of providers within the health care team.

Objective: To demonstrate the importance of nursing theory by selecting and applying a middle-range nursing theory to a common practice problem and a research scenario.

Methods: Kennedy's criteria were used in evaluating a theory for application to a common practice problem.

Results: Based on Nathaniel's Theory of Moral Reckoning, three interventions were designed for practice integration, two of which were chosen for use in research.

Conclusion: Through the application of Nathaniel's Theory of Moral Reckoning to practice and research, interventions can be designed to mitigate the development of moral distress, prevent nursing burnout, and improve retention of nurses and APNs in critical care.

Introduction

Nursing theory is the basis of all nursing practice, providing a framework and rationale for nursing care. Despite this, many nurses cringe at the mention of nursing theory, feeling that it belongs within the walls of academia and not at the bedside. The purpose of this essay is to present a common clinical scenario, evaluate a nursing theory, and illustrate the application of this theory in both nursing practice and research. Nathaniel's Theory of Moral Reckoning (2006) has been chosen for evaluation because an increasing number of nurses are citing burnout and stress as reasons for leaving the profession. Retention of skilled nurses is high on every chief nursing officer's priority list, yet the reasons for burnout are often not clear. Moral distress is one factor that can contribute to burnout. The Theory of Moral Reckoning illustrates a pathway whereby we can intervene to prevent moral distress. Three interventions will be described for application in practice, with two of these interventions chosen for application to a research scenario. This manuscript is intended for illustration purposes only; thus specifics regarding research measures, sample size, and study duration are not discussed.

The Practice Problem

The job of the critical care Advanced Practice Nurse (APN) is difficult and multifaceted. In many cases the APN is caring not only for a critically ill patient, but for the patient's family who is in crisis. From the point of view of the family, the APN is a representative both of the nursing staff and of the staff physicians. From the point of view of the bedside nurses, the APN is a role model. APNs are licensed independent practitioners who work with and for physicians. The education of APNs differs from that of the physician in that physicians are trained on the medical model of curing disease while the training of APNs focuses largely on health promotion and illness prevention. The job of the APN becomes significantly more difficult when opinions regarding patient management differ among members of the health care team. There are times when the APN recognizes that escalating medical interventions will not result in improvement, while other members of the health care team may be determined to continue lifesaving efforts. In such cases, the APN feels a responsibility to be frank in discussions with family and guide them toward an understanding of the severity of their loved one's condition, yet at the same time may feel compelled to communicate the same message as the rest of the care team. The chasm that this creates, between the APN's professional assessment of the patient's prognosis and the actions that must be taken to remain in concert with other providers, leads to internal conflict, self-doubt, and moral distress.

This practice challenge is illustrated in the case of a 42-year-old man who required emergent, livesaving surgery. He had severe hemodynamic instability requiring extracorporeal membrane oxygenation (ECMO) for several weeks. After successfully separating from ECMO he developed a fungal infection which required reoperation and continuous irrigation of the wound. He had a tracheostomy, was ventilator-dependent on inhaled flolan, sedated, and chemically paralyzed to maintain adequate oxygenation. He had been experiencing sustained ventricular tachycardia requiring multiple shocks each day for several days despite escalating medical suppressive therapy with continuous antiarrhythmic drips. He became septic, requiring multiple vasopressors at high doses to maintain his blood pressure, and had an intra-aortic balloon pump placed to augment his cardiac output. His condition had been slowly declining for days but became particularly critical when he stopped making urine. He did not respond to additional measures to stimulate urine production, and multi-system organ failure due to overwhelming sepsis was suspected.

The health care team had reached a critical decision point. The lead provider was not present, thus necessitating communication via email and telephone. The patient did not have family present to assist with decision making. When the family called, it was clear to the APN that they did not grasp the severity of the patient's condition. They would ask to speak with him, ask when he would be coming home, and inquire about the cost of his prescriptions upon discharge. While the APN tried to gently explain the severity of the man's illness, the family seemed unable to grasp the depth of his illness. Meanwhile, the lead provider wanted to push forward with the initiation of dialysis.

Both the APN and the nursing staff felt that the patient's tenuous hemodynamic state would not tolerate even continuous dialysis. After multiple telephone conversations about the patient's declining condition, the lead provider would not be swayed from initiating dialysis, and the APN felt compelled to consult bioethics.

One might hypothesize that the addition of bioethics teams to the hospital setting has helped to ease the tension created when health care team members hold differing views of what constitutes appropriate care for a patient who is without a living will or capable power of attorney. Unfortunately, this is often not the case. In the practice setting, the use of bioethics consults can be perceived by other providers as an insult, a threat to their authority, and a questioning of their decision-making ability. Despite the purported anonymity of bioethics referrals, the health care team is fully aware that the referral has come from the nursing staff and the APN is seen as the unit leader. If nurses witness a negative reaction from the care team towards the APN, they may be less likely to risk participation in moral decision making. If APNs receive negative feedback for their patient advocacy, they may be less willing to act in concert with their values and beliefs by consulting bioethics in the future. This ethical tug-of-war creates a lasting sense of moral distress for the APN and likely impacts the nurses who witness these events.

This case provides an example of the moral challenge facing the APN and nurses as a whole. Some members of the care team were outraged that bioethics was consulted. The lead provider felt that his authority had been undermined and demanded to know who had called bioethics. There were threats that the incident would be reported to higher authorities. The APN listened to the provider's concerns and recounted her efforts that day, pointing out that she had been in constant communication, explaining the continued decline in the patient's status despite maximum efforts, and the patient's lack of response to escalating care. The APN took responsibility for the bioethics consult and was fully prepared to defend her position. This appeared to diffuse the situation and, after further discussion with bioethics staff, the lead provider agreed to a Do Not Resuscitate (DNR) order. The patient died several hours later from sustained ventricular tachycardia. At the end of the day, one of the ICU nurses hugged the APN, saying, "I never want your job."

The Theory of Moral Reckoning in Nursing

The Theory of Moral Reckoning in Nursing has been chosen for evaluation. The criteria outlined by Kenney (Cody, 2013) were considered in selecting this theory for application to the practice problem. The purpose of this middle-range theory is to provide a framework that encompasses moral distress but is larger, seeking to illustrate the choices, actions, precursors, and long-term consequences of nurses' decision-making process in troubling patient care situations (Smith & Liehr, 2008). This purpose fits well with the practice problem described as well as with the author's values and beliefs. It is congruent with the author's professional experiences and explains the lingering discomfort felt when reflecting on difficult patient care situations. The theory is parsimonious and the concepts are well defined. The Theory of Moral Reckoning

is applicable across a variety of practice settings as well as throughout many levels of nursing practice (bedside nurse, APN, Clinical Nurse Specialist, nurse manager/executive, nurse educator). In addition, the author can visualize the model being used in disciplines outside of nursing by first responders, educators, and judges.

The Theory of Moral Reckoning was developed by Alvita Nathaniel in 2003 as her dissertation project at West Virginia University. Dr. Nathaniel has a strong foundation in nursing ethics as both an instructor and an author (Smith & Liehr, 2008). She began her research to answer the question, "What transpires in morally laden situations in which nurses experience distress?" (Smith & Liehr, 2008, p. 278). Through the interview process she came to realize that these situations were more complex than the concept of moral distress alone could explain. She developed her theory from themes that emerged in these interviews and organized these themes into a framework for understanding moral distress within the larger context of a nurse's decision-making process, the precursor conditions the nurse draws upon, and the consequences that this process may produce. In Smith & Liehr (2008), Nathaniel states, "The theory of moral reckoning challenges nurses to tell their stories, examine conflicts, and participate as partners in moral decision making" (p. 278).

The Theory of Moral Reckoning includes four key concepts or stages: ease, situational binds, resolution, and reflection. Ease involves four properties: becoming, professionalizing, institutionalizing, and working. Becoming is the development of a set of core values and beliefs that one learns through life. Professionalizing teaches the nurse the cultural norms and practice standards of nursing through formal education as well as early practice experiences. Institutionalizing is the process whereby the nurse learns the culture and norms of the hospital or facility. Working is the "doing" of nursing, the tasks performed as well as the interactions with patients, families, and other healthcare providers that occur on a daily basis.

The first concept in the Theory of Moral Reckoning, ease, defines a stage of comfort where the nurse has confidence and skill. This stage occurs after passing through the novice phase of practice. The stage of ease is interrupted by a situational bind or a troubling event that challenges the core personal and professional beliefs that the nurse holds. The situational bind creates uncertainty, discomfort, and a sense of urgency to resolve the struggle. This is where Nathaniel (2006) places moral distress, a concept that continues throughout the process of moral reckoning. Because the situational bind interrupts the stage of ease, the nurse enters the stage of resolution where a decision must be made: whether to take a stand and act on core values and beliefs, or give up and remain silent about doubts and feelings.

As outlined in the Theory of Moral Reckoning (Nathaniel, 2006), after choosing a path of action or inaction in the stage of resolution, the nurse enters the stage of reflection. Here the nurse remembers the critical events in the situational bind, re-tells the story in an attempt to seek meaning and reconcile actions with personal beliefs and values,

examines the conflict in both the intellectual and emotional realms, and finally lives with the consequences of the decision. The stage of reflection can last a lifetime and may result in the loss or renegotiation of self-concept, boundary setting, changes in nursing care practices, the loss of personal and professional relationships, job change, and in some cases change of profession. Ultimately, the stage of reflection results in the evolution of ethical practice for the nurse.

While there is a large body of research surrounding moral distress, few studies have used the Theory of Moral Reckoning as a framework for study. Pratt, Martin, Mohide, and Black (2013) recently published their study, "A Descriptive Analysis of the Impact of Moral Distress on the Evaluation of Unsatisfactory Nursing Students," in which they applied Nathaniel's Theory of Moral Reckoning to the descriptive analysis of six studies, seeking to understand the process that nurse educators used in their decision making regarding the moral dilemma of delivering an unsatisfactory grade to nursing students. They found that it accurately explained the experience of the educators and they identified several areas for intervention to address the development of moral distress in faculty as well as additional research questions stemming from the theory application.

Practice Integration

Three interventions are proposed to address the process of moral reckoning as outlined by Nathaniel (2006): the participation of bioethics professionals in weekly multidisciplinary ICU rounds; the addition of multidisciplinary bioethics workshops to annual education for healthcare providers; and the establishment of a helpline for support of nurses during and after difficult clinical situations. The first two interventions address Nathaniel's stage of ease, specifically the properties of professionalizing and institutionalizing. The participation of bioethics professionals also addresses the stage of resolution. The helpline intervention addresses the stage of reflection.

The participation of bioethics professionals in weekly multidisciplinary ICU rounds addresses the property of institutionalizing by changing the environment in which situational binds occur. The routine presence of bioethics professionals in the ICU will diminish the burden on nurses to place bioethics consults as well as mitigate the emotional response of providers when approached by the bioethics team. Nurses will come to know their bioethics colleagues and will be more likely to use this valuable resource during the stage of resolution when the nurse must choose to act on core beliefs or remain silent.

The second intervention is the addition of annual multi-disciplinary bioethics workshops to annual educational requirements for healthcare providers. This intervention addresses Nathaniel's property of professionalizing within the stage of ease. The activity will include refreshers on the application of bioethical principles to patient care, discussion groups, and exercises to help participants reconnect with individual core values and beliefs. The discussion groups will be facilitated by bioethics professionals, attended by eight to ten healthcare providers per group, and will allow for a forum to discuss

different views and solutions to troubling practice situations. The use of the American Association of Critical Care Nurses publication, *4 A's to Rise Above Moral Distress* (2006), will give participants a process to follow in morally troubling situations. Just as health care providers gain skill and confidence in mock Advanced Cardiac Life Support codes and open-chest drills, regular participation in mock situational binds will provide caregivers with the tools and confidence to participate in moral decision making discussions in clinical practice.

The third intervention is a twenty-four-hour helpline called "Nurse to Nurse." This addresses Nathaniel's stage of reflection in which nurses work through the cognitive and emotional factors leading to a decision and live with the consequences. While family, friends, and co-workers are willing to listen to a nurse's stories, these sources of support may come with judgment or advice that adds to the nurse's confusion. At times, health care providers may be too distressed or embarrassed to reach out to friends and colleagues. The helpline will be staffed by bioethics or psychiatry professionals and will provide anonymous, non-judgmental support for caregivers who want to tell their stories. Through this intervention the caregiver will feel supported in the process of reflection.

In applying these three interventions to the process of moral reckoning, the goals for nurses, including APNS, are: to be better prepared to contribute to moral decision making; to feel supported during and after moral decision making; and to experience moral growth and strengthening of ethical practice. The objective of these interventions is for nurses to experience less moral distress and, as a result, for retention to improve. Evaluation of the level of moral distress can be measured using the Moral Distress Scale (MDS) (Corely, 2001). Administered before the interventions are in place as well as several months later, the Moral Distress Scale will measure the effect, if any, that the interventions have had on the amount of moral distress that nurses experience in clinical practice. Results will be compared between intervention and control ICUs in the same institution. Anonymous surveys of health care providers will gather data on confidence level and participation in moral decision making. Helpline usage data will be gathered as will retention data in both intervention and control ICUs.

Application of Theory to Research

Advances in medical technology have led to longer life spans, more treatment options, and answers to many complicated health problems. They have also brought more complex decision making and moral challenges to those who have chosen health care as their profession. Nurses at every level of practice face difficult practice situations. When nurses cannot do what they think is right, they experience moral distress (Corley, 2002). Unresolved moral distress can lead to the loss of the capacity to care, avoidance of patient contact, and failure to give good physical care to patients as well as physical and psychological problems for the nurse (Rushton, 2006). How can we provide APNs and nurses with tools and support during critical ethical decision making so as to blunt the development of moral distress and prevent its sequela? This is the research

question that will be addressed using Nathaniel's Theory of Moral Reckoning in nursing as a framework.

The research question will be addressed by applying the two previously discussed interventions: the participation of bioethics professionals in weekly ICU multi-disciplinary rounds and the addition of multi-disciplinary bioethics workshops to annual competency education. The hypothesis is that by providing education, tools, and practice to nurses during the stage of ease, we can reduce the negative impact of a situational bind and decrease moral distress at all stages of the process of moral reckoning. In addition, by making discussions of bioethics a routine part of patient care and making bioethics professionals available to support nurses during decision making, nurses will gain confidence in their ability to participate in moral decision making and experience moral growth in the stage of reflection. In addition, the presence of bioethics professionals in ICU rounds will foster positive interdisciplinary interactions in discussions regarding complex patient care decisions and potentially avoid conflict among care team members.

The Theory of Moral Reckoning provides the researcher with a framework to understand the process of moral reckoning and therefore design interventions to address and support this process. The development of moral distress and its lingering negative effects on nurses can be altered as a result of understanding the process of moral reckoning. Figure 1 provides an illustration of the proposed interventions (in blue) superimposed upon the concept map of the Theory of Moral Reckoning (in purple & yellow). The participation of professional bioethics support in the stage of ease

Figure 1: **Application of Research to the Theory of Moral Reckoning**

Adapted from: Nathaniel, A. K. (2006). Moral reckoning in nursing. *Western Journal of Nursing Research, 28*(4), 419-438

addresses the properties of institutionalizing and working. This intervention provides the nurse with support before a situational bind occurs and may serve to prevent situational binds from happening. Routine inclusion of bioethics in patient care creates an environment in which ethical conversations are the norm. It takes the burden of consultation off of the nurse. Bioethics professionals will be well known and more readily available to support nurses in the stage of resolution, the moment of decision making. This type of support will decrease the development of moral distress for the nurse.

The addition of multi-disciplinary bioethics workshops to annual education also addresses Nathaniel's stage of ease. The property of professionalizing continues throughout one's career through continuing education and practice experience. The proposed intervention will provide the nurse with tools, competence, and confidence to participate in moral decision making. This in turn will lead to less moral distress, less nursing burnout, and higher retention.

Conclusion

The process of moral reckoning need not end in lifelong reflection and lingering moral distress. Through the application of Nathaniel's Theory of Moral Reckoning, the interventions described can mitigate moral distress and lead to moral growth and development of the nurse's ethical self, thus preventing nursing burnout and promoting retention of nurses and APNs alike.

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Making the case for hardiness among people living with HIV in Nigeria

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Abstract

The current gains in the fight against HIV which have seen mortality and morbidity greatly reduced are noticeable to the casual observer. While these gains are laudable, it is undeniable that HIV pandemic continues to cause enormous human suffering, especially in Sub-Saharan Africa (the region with the deadliest burden of HIV in the world). This paper considers people living with HIV (PLWH) in Nigeria to illustrate how knowledge of conceptual models can be used to produce better patient outcomes. Combining literature review and anecdotal experience, we used the hardiness model to analyze the attributes of PLWH in Nigeria. Based on the findings of this study, it would appear that people living with HIV in Nigeria are not expressing high levels of hardiness in the management of their condition. Nurses can assist clients in exerting control over their challenges through client advocacy and by empowering them to engage in the interactive process of commitment, belief, and positive outlook.

Keywords: Hardiness, HIV, concept

Introduction

Evidence suggests that stress leads to physiologic and behavioural responses, either of which is capable of resulting in illness (Alfred, 2011; Eschleman, Bowling & Alarcron, 2010; Bartone, Hystad, Eid & Brevik, 2012). It is therefore not surprising that researchers are interested in the effective management of stress-provoking conditions, especially in cases of chronic illness such as HIV (Carvalho, Morais, Koller & Piccinini, 2007; Wang, 2015; Khan, 2015; Vance, Struzick & Masten, 2008). Since HIV was first reported over 30 years ago, it has become one of the world's most serious threats to human health and development (Ferreira, Pessoa & Dos Santos, 2011). According to the Joint United Nations Programme on HIV/AIDS, 78 million people have been infected with HIV, and 39 million have died from the epidemic so far (cited in Karki, Shrestha, Huedo-Medina & Copenhaver, 2016). The enormous impact of HIV is evident; in 2012, for example, 35 million people were living with HIV, 1.6 million died of AIDS-related illnesses, and 2.5 million new infections were recorded (UNAIDS, 2013).

While every region in the world has in some way been affected by the HIV epidemic, the grip of the epidemic has been deadliest in Africa (AVERT, 2012). Sub-Saharan Africa (SSA) remains the most severely affected region with nearly 1 in 20 adults living with HIV, accounting for 69% of PLWH worldwide (UNAIDS, 2012). In 2012, approximately 23.5 million people were living with HIV in Africa, with Southern Africa having the highest prevalence of HIV in the world; some countries such as Swaziland, Botswana, and Lesotho have HIV prevalence of more than 20% (AVERT, 2012). South Africa continues to have the most severe HIV epidemic in the world, with 5.9 million of its population infected with HIV (AVERT, 2016a).

Although the HIV prevalence in Nigeria (a country in the SSA region) is relatively low (4.1%) compared with the HIV prevalence in other countries in Africa (e.g. 17.3 percent in South Africa, 23.4% in Botswana), its large population size (174 million in 2013) means that about 3.2 million people are living with HIV in the country (NACA, 2012). These statistics mean that it carries the second heaviest burden of HIV in the world (AVERT, 2016b). The HIV epidemic has dealt a devastating blow to the life expectancy of Nigerians, reducing it from 53.0 years in 1990 to 45.5 years in 2002 (Nasidi & Harry, 2006). Since the advent of antiretroviral therapy (ART), however, the life expectancy of Nigerians has been gradually increasing (Nasidi & Harry, 2006).

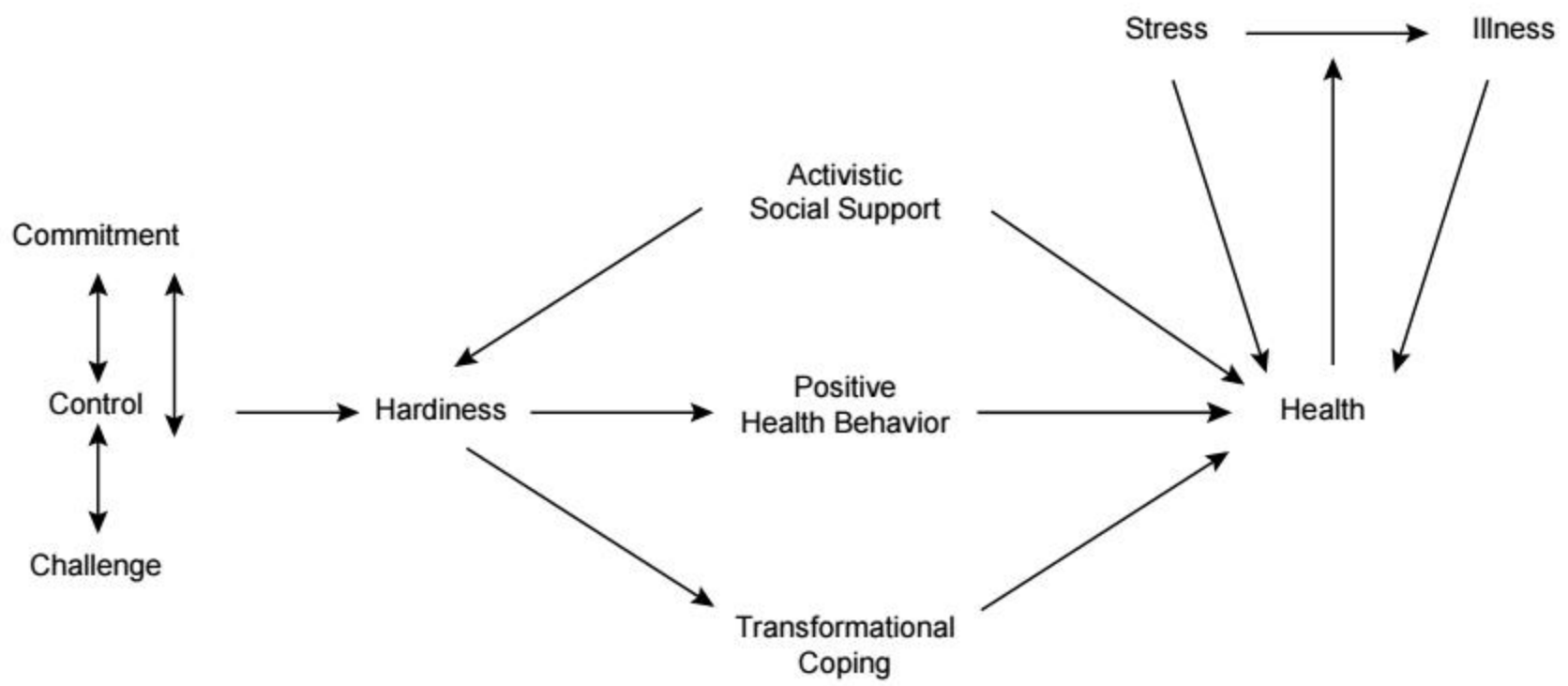
As people living with HIV now live longer due to the advent of antiretroviral therapy, efforts are being stepped up to ensure that all HIV-infected individuals have access to ART. However, the changing economic landscape has hampered the availability of ART services to eligible HIV positives especially in the low-resource countries that are hardest hit by the epidemic (UNAIDS, 2012). Thus there is a need for PLWH to draw strength from their internal abilities. Drimie and Casale (2008) noted that the HIV epidemic is exacerbating individual and family stressors, undermining resilience and creating powerlessness and vulnerability. In order to sustain their well-being, PLWH must cope with challenges of adherence, stigma and discrimination, opportunistic diseases, grief from loss of loved ones, and end-of-life diseases. For people infected by the epidemic, HIV is not only a medical experience, it is also a psycho-social and emotional experience that profoundly affects their lives (Emanuel, 2012).

Theoretical framework

The theoretical framework guiding this study stems from the work of Maddi & Kobasa (1984), which was termed 'Factors Affecting Health/Illness Status'. Within this framework, all stress-generating events represent potential strains or threats to individuals. For an individual, a continuous stress can be a menace or tension, which may manifest physically (trembling, chest pain, headache) or psychologically (anxiety, depression, loss of interest in self and life). Those facing continuous and repetitive stress such as PLWH may show decreased resistance to stress, leading to physical or psychological strain. Maddi & Kobasa (1984) stipulate that in the face of stressful events, hardy individuals examine the situation in perspective and perceive them as meaningful (commitment) but changeable (control) and of potential value for personal

growth (challenge). This framework suggests that hardiness not only buffers against the deleterious effects of stressful life events but also sensitizes an individual to the type of social support someone would use in times of stress. Hardy coping, however, can be said to occur only when an individual displays the attributes of commitment, control, and challenge in a particular situation. When applying the theoretical framework to research on PLWH in Nigeria, we define stress as the diagnosis of HIV, the physiological effects of HIV, the need to adapt to long-term use of antiretrovirals, and chronic lifestyle changes. Health practices are defined as optimal adherence to antiretrovirals, engaging in healthy sexual practices, committing to clinic and hospital attendance, and maintaining strong ties with appropriate social support networks. When an individual is diagnosed with HIV, the person's health at the time of diagnosis moderates the stress-illness relationship and this may affect the development of psychological problems, poor adherence, engaging in risky sexual practices, and poor clinic attendance, leading to higher risk of morbidity and mortality. If the HIV-positive individual demonstrates commitment, control, and challenge (hardiness), he or she will employ transformational coping measures, practice positive health behaviors, and make use of social support, which will affect his or her well-being.

Figure 1: **Kinder's model of Psychological Hardiness**



Aim of the study

The aim of our study was: (a) to apply a conceptual framework to illustrate the indispensable role of theories in the care of PLWH, and (b) to sensitize health professionals to the use of theoretical models in the care of PLWH.

Methods and procedures

A literature review was conducted on how PLWH in Nigeria cope with the condition. Then, the theoretical model was used to analyze the results from the literature. Peer-

reviewed articles that focused on specific variables of AIDS care such as antiretroviral adherence and retention in care were retrieved from Google Scholar and EBSCOHOST.

People living with HIV and AIDS in Nigeria

Aside from leadership failure that has translated into poor social infrastructure, poverty, and a high unemployment rate (Ampratwum, 2008), PLWH in Nigeria also contend with issues of stigma, discrimination, ARV adherence, and anxiety over the future (Apata, Rahji, Apata, Ogunrewo & Igbalajobi, 2010; Ilebani & Fabusoro, 2011). Chronicity of the infection and its antecedent opportunistic challenges such as malignancy, tuberculosis, and lack of resources often translate into powerlessness and poorer health outcomes (Ilebani & Fabusoro, 2011). Obstacles related to scaling up of access, institutional reforms, and political challenges mean that over 1.4 million ARV-eligible PLWH in Nigeria are currently not accessing ART services (NACA, 2012). It is worth exploring how PLWH in Nigeria are coping with their new challenge in this uneasy context.

A systematic review of research on mental health of PLWH in Africa revealed varying types and degrees of mental health problems (Brandt, 2009). Brandt (2009) reported depression as the most common mental disorder among PLWH in Africa, constituting more than 70% of the disorders. Studies that explored quality of life (QoL) among PLWH in Nigeria revealed low QoL when compared with participants who are seronegative (Ogbuji & Oke, 2010; Fatiregun, Mofolorunsho & Osagbemi, 2009). Specifically, PLWH in Nigeria scored lower in social relationship/environment domains as compared to spiritual and psychological health domains (Udobong, Udonwa, Charles, Adat & Udonwa, 2015). This finding was supported by Olugbemiga (2008) who recorded poor utilization of family and societal support systems among PLWH in Nigeria. As compared to typical Western culture, which favors individualism over family systems, Africans are known to rely extensively on external support systems, such as family, friends, church, and significant others (Samuels & Blake, 2011; Udobong et al., 2015). Under-utilization of this important support system might be connected with widespread discrimination against people living with HIV and AIDS (PLWHA) in Nigeria and the persistence of misconceptions about the transmission and prognosis of HIV infection.

PLWH in Nigeria tend to exert control over their challenging new situation by being spiritual and sometimes by putting their antiretrovirals in unlabeled bottles (Sekoni, Obidike & Balogun, 2012), but neglecting aspects of hardy social support can lead to outcomes that are personally and societally deleterious. Several studies in Nigeria (Charurat et al., 2010; Falang, Akubaka & Jimam, 2012; Ekama et al., 2012; Olley, 2008) revealed that despite rapid scaling up of ARV and increased awareness about the importance of a near perfect adherence to ART, a large percentage of PLWH still defaults in its usage and engage in risky sexual practices.

A review of the literature on how PLWH in Nigeria are managing their new challenge (Olisah, Baiyewu & Sheikh, 2010; Charurat et al., 2010; Meloni et al., 2014) revealed the need for more practical coping skills in this population. To achieve adequate viral load control, maintain a good CD4 count, and prevent development of resistance and

opportunistic infections, over 95% adherence to ART is required (Sekoni, Obidike & Balogun, 2012). Alarmingly, a significant proportion of PLWHA in Nigeria are defaulting in ART usage and hospital attendance (Meloni et al., 2014). Furthermore, the use of external sources of support among PLWH in Nigeria is still low, although this might be attributable to the high rates of stigma and discrimination associated with the disease (Ogbuji & Oke, 2010). The negative impact of stress reaction has been demonstrated to be strongest when social support was low (Vogt, Rizvi, Shipherd & Resick, 2008).

Results and discussions

Using the Hardiness model to analyze the literature findings

Hardiness has been conceptualized as consisting of three attitudes of commitment, control, and challenge (Maddi, Matthews, Kelly, Villareal & White, 2012; Kobasa, 1979). To stay healthy, individuals must exhibit these three characteristics: (a) Control (vs. powerlessness), or the extent to which an individual believes that he or she can influence the events of his or her life. Control enhances self-confidence and the belief that the problem is conquerable. (b) Commitment (vs. alienation), or the extent to which a person balances engagement with a variety of life domains, such as friends, work, and family. Commitment gives individuals a sense of purpose and serves as a toolkit from which resources can be drawn in the face of challenges. And (c) Challenge (vs threat), or the extent to which individuals perceive difficult situations as an opportunity for growth.

Ogbuji and Oke (2010) and Hilhorst, van Liere, Ode and Koning (2006) reported that limited use of family support by PLWH stimulated deep feelings of sadness, dejection, hopelessness, anxiety, and fear, thereby negatively affecting their quality of life. Furthermore, Sekoni et al. (2012) reported that PLWH skipped medication because of their inability to disclose to significant others, who might be present at the time when medication needs to be used. Based on the available literature, it looks as though PLWH in Nigeria are underutilizing the support and commitment components of hardiness. More research is needed to validate this claim, however. Sekoni et al. (2012) also reported cases where PLWH stopped taking medications because of medication fatigue, and they sometimes leave home without taking medications along. This suggests an inability of PLWH to see their condition as a challenge.

Reporting of risky sexual behaviours and denial despite awareness of HIV status (Ekama et al., 2012; Olley, 2008; Yaya et al., 2014) also suggests poor engagement with the challenge component of hardiness. Engaging in high-risk sexual intercourse can jeopardize the long-term survival of PLWH due to increased risk of contracting drug-resistant HIV strains and high cost of treatment for resistant HIV strains. This also stands to jeopardize the health of their partners. In light of the above results, nurses should educate and motivate the patient and family members on how to remain committed to taking the antiretroviral drugs, maintaining regular check-ups, and identifying strong ties that can assist them in the proper management of their

condition. Emphasis should also be focused on encouraging family members to provide adequate support to the individual. In addition, holistic caring approaches that address the physical, psychological, and spiritual aspects of care might help PLWH and family members take control of the situation.

Providing health education on how to deal with unexpected situations can also strengthen the coping ability of PLWH. Nurses can provide simulated situations related to different unexpected eventualities that might arise during the disease process, thereby preparing the patient to deal with the situations mentally and physically. Since hardiness moderates the relationship between stress and depression and also emerges as a more powerful buffer against illness than physical exercise and social support (Maddi et al., 2012), the hardiness model therefore provides an excellent framework to assess and appraise coping skills among this population.

Limitations

Limitations in the conclusions drawn from our review are related to the focus of the study. Most of the studies reviewed were conducted in Nigeria, and findings might not be applicable to other regions in Africa and elsewhere. Furthermore, most of the reviewed studies are cross-sectional; therefore, the disposition of the PLWH might change over time. Also, despite the attempt to be comprehensive, we might not have identified all relevant studies.

Conclusion

Developing a hardy personality might assist PLWH in Nigeria in avoiding development of internalized stigma, while also leading to development of appropriate health and help-seeking behaviours. The use of the hardiness model revealed deficits in commitment and challenge components of hardiness among PLWH in Nigeria. This manifests through poor adherence to medication, engaging in risky sexual practices, loss to follow-up (LTFU), low quality-of-life and under-utilization of available support systems. Pre-test and post-test HIV counseling serves as the best opportunity to assess, evaluate and probably reinforce positive coping styles, but as Olley (2008) noted, these counseling sessions are brief, and most do not contain motivational components for real behaviour change. This might explain why PLWH still engage in risky sexual behaviours, and weak coping styles such as denial are widely used. Nurses can make their contacts with patients worthwhile by reinforcing positive beliefs and attitudes. Since nurses spend more time with clients and participate actively in counselling sessions, they can create an environment that facilitates the development of hardiness among PLWH by engaging in active advocacy for PLWH and assisting them to identify and use important external support systems. The use of the hardiness model can also assist nurses to identify the weak links and patients' vulnerability.

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