JNDSS

JOURNAL OF NURSING DOCTORAL STUDENTS SCHOLARSHIP

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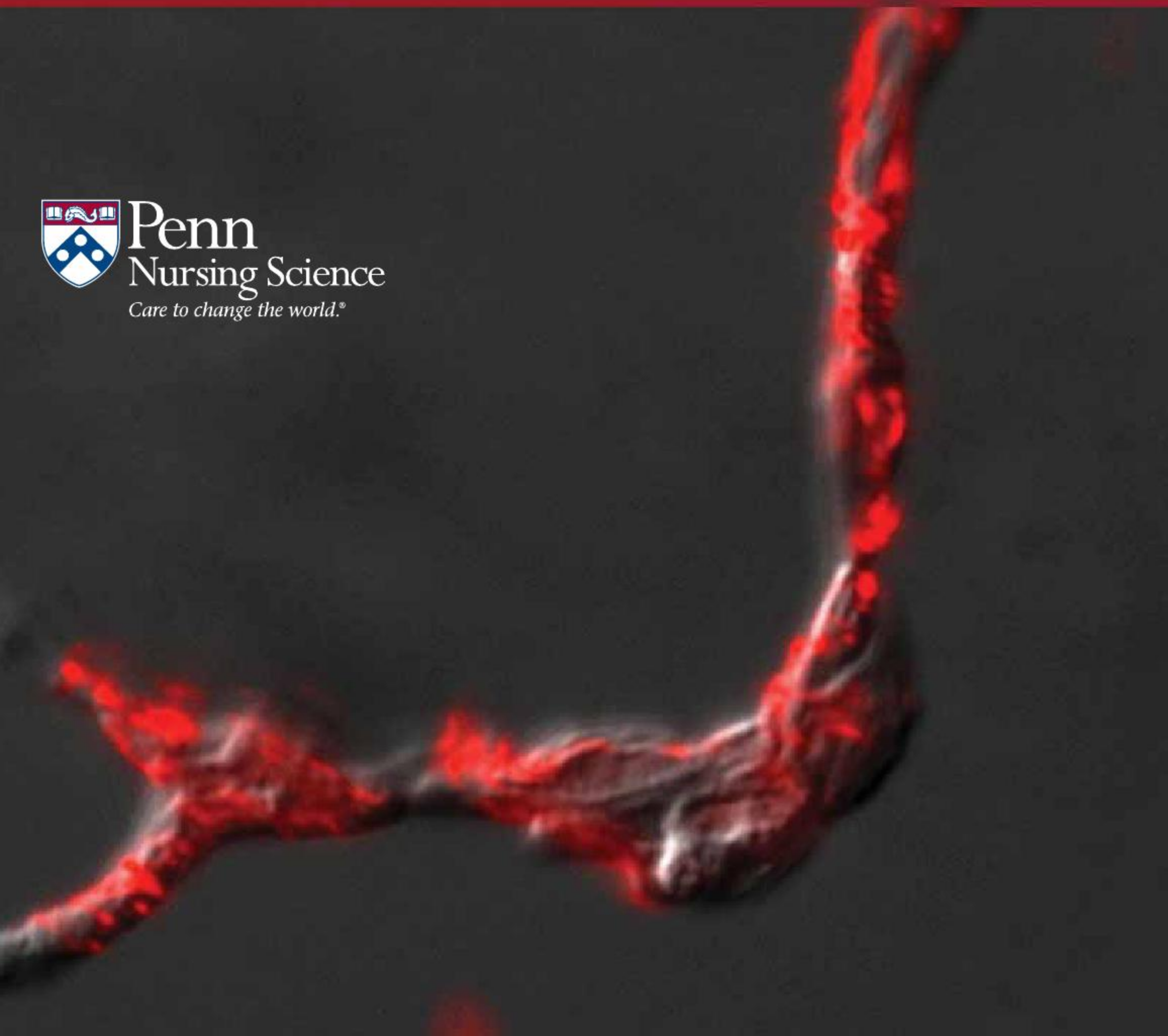

Mission

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

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About the cover:
Image by Melanie Lyons, PhD, RN
Nomarski fluorescence image of a HSP70 labeled primary antibody in a section of a rat lung alveolus. Magnification 60X. Nikon Eclipse E600 microscope.

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Paule V. Joseph is a rising fourth-year PhD student at The School of Nursing at the University of Pennsylvania. She is a T32 Ruth L. Kirschstein NRSA Predoctoral Fellow Research on Vulnerable Women, Children, and Families in the Centers for Global Women's Health and Health Equity Research. She earned an associate degree in Nursing from Hostos Community College. Her Bachelor's degree in Nursing from College of New Rochelle and Masters Science in Nursing as a Family Nurse Practitioner from Pace University in NYC. Her research focuses on obesity and sweet taste genetics and her advisers are Dr. C. Compher and Dr. L. Sommers. She is interested in studying genetic correlates associated with childhood obesity. Her dissertation research will employ genetic research to explain how a genetic predisposition towards sweet taste might affect a child's physiological expression of obesity. Paule works in the laboratories of Dr. Reed and Dr. Mennella at the Monell Chemical Senses Center, leaders in chemosensory biology. Prior to beginning her studies at Penn Nursing, Paule worked at Mount Sinai Hospital and at Columbia Presbyterian-Weill Cornell Hospital in New York City. Paule has been a member and leader in several national nursing and non-nursing organizations. She also served as co-chair for the Doctoral Student Organization at the School of Nursing and as Vice Chair for International Affairs for the Graduate Student Assembly.

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Justine S. Sefcik, MS, RN, is a 2012-2014 National Hartford Centers of Gerontological Nursing Excellence Patricia G. Archbold Scholar and a previous Jonas Hartford Scholar. She is a rising fifth-year PhD student at the University of Pennsylvania School of Nursing. She earned a Bachelor's degree in Art from the State University of New York College at Oneonta, an Associate's degree in Nursing from the State University of New York at Delhi, and a Bachelor's/Master's degree in Nursing Administration from the State University of New York Institute of Technology. Justine started her nursing career as a Licensed Practical Nurse and has 16 years of experience working as a nurse in various positions in long-term care. Prior to entering the PhD program she was working as Assistant Director of Nursing/Education Coordinator of a nursing home. Justine's dissertation work focuses on nursing home residents with moderate to severe dementia and persistent vocalizations. Her mentor and dissertation chair is Dr. Pamela Cacchione.

Message from the Editors

Academic Dishonesty: Plagiarism and its Consequences

Dear Colleagues:

We are thrilled to have our second issue of the JNDSS. We also want to congratulate nursing doctoral students' community with this significant achievement — this journal is an evidence of an increasing scholarship and impact of the discipline of nursing.

In this editorial, we wanted to briefly present the issue of academic dishonesty. As editor of a journal, there are many issues that one has to deal with including plagiarism and academic dishonesty. What do you do when you encounter this issue? What should be done next? Those were questions that we had to ask ourselves as we prepared the current issue of JNDSS. At JNDSS, we rely on our peer reviewers, but we have also instituted measures to screen manuscripts submitted to us for plagiarism. We have a zero tolerance policy for manuscripts submitted with plagiarized information. At JNDSS, we follow the Committee on Publication Ethics (COPE) guidelines to respond to issues of plagiarism (Committee on Publication Ethics, 1999).

Unfortunately, plagiarism continues to be a prevalent issue. Plagiarism is defined as significant replication without acknowledging the original source and it is a serious ethical issue and research misconduct. It can be intentional or unintentional. Plagiarism can be categorized as either plagiarism of others' work or self-plagiarism (Masic & Kujundzic, 2013). Self-plagiarism is the publication of substantially similar scientific content of one's own in the same or different journals. Self-plagiarism causes duplicate papers in the scientific literature, violates copyright agreements, and unduly burdens reviewers, editors, and the scientific publishing enterprise (Roig, 2006). Plagiarism from others' works constitutes the most offensive form of plagiarism. It is using someone else's work as if it is your own (Masic, 2012). Any text, equations, ideas, or figures taken from another paper or work must be specifically acknowledged as they occur in the paper or work. Figures, tables, or other images reproduced from another source normally require permission from the publisher.

Plagiarism has consequences that can be personal, professional, ethical and legal. Plagiarism can hurt a scientist's reputation both personally and professionally. The legal consequences are serious and follow copyright laws. A plagiarist can also be prosecuted for a criminal offense in which the individual faces imprisonment, fines, and community service among others. In other cases, a monetary award may be sought for damages.

The consequences of plagiarism are unnerving and should be avoided at all costs. Whether or not an author plagiarized accidentally, the author(s) will still be held

responsible. The following are just some basic tips that can help authors avoid plagarism: use a citation manager (EndNote, RefWorks, Zotero, Mendeley among others), paraphrase, cite, quote, cite your own material and provide references.

We at JNDSS are working to ensure that every article published in our journal contains original content that properly acknowledges and cites the work and ideas of other authors. We want to thank our reviewers who work hard to ensure the content of our journal is written in an ethical manner.

Paule Joseph
Editor-in-Chief

Megan Streur
Editor-Elect

Maxim Topaz
Editorial Board Member

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Benefits and Lessons Learned from Organizing and Managing an International Nursing Students' Group in Informatics

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Abstract

This commentary reflects on an experience of organizing and managing an international group of nursing students focused on healthcare informatics. Readers may find the suggestions and activities presented here to be a useful guide to similar projects, namely, organizing collaborative work among national or international students.

One of the main goals of any doctoral program is to prepare scientists who are active participants in their academic communities, nationally and internationally. For students, joining a community of scholars brings many benefits, including development of professional and personal connections, constant exposure to new ideas, opportunities to work with leaders in a particular scientific field etc. In my opinion, participating in a professional organization or interest group is one of the best ways to learn collaborative skills in a natural and supportive environment. In this commentary, I will reflect on a personal experience of being involved with an international professional group. I will briefly summarize some of the central group's activities and present the skills learned during my involvement with the group. I hope that this reflection will inspire fellow students to similar engagements and contribute an interesting personal perspective on professionalization processes in the sciences.

Currently, I am a fourth-year doctoral student in nursing at the University of Pennsylvania. My scientific focus and life passion is informatics, or using health information technology (such as electronic health records) to provide better care for people. Early on in the doctoral program, I became an active participant in several professional organizations. For example, I volunteered and served as a member of a public policy group with the Nursing Informatics Working Group of the American Medical Informatics Association (AMIA). Being part of the public policy group gave me the opportunity to learn more about US legislation and nurses' role in legislative efforts; I wanted to obtain a more global picture of nursing informatics, however. I started searching for an official channel to satisfy my growing interest in international

trends and soon realized that opportunities for students' professional development in nursing informatics were few. Attending professional conferences in informatics, I was surprised to hear many of my fellow nursing informatics students from around the world expressing similar feelings.

Creating an international interest group

In 2012, at the biennial congress on nursing informatics in Montreal (Canada), I had a chance to discuss this topic with Dr. H. A. Park (Seoul National University, Korea), one of the leaders in the field and the chair of the Nursing Informatics Special Interest Group of the International Medical Informatics Association (IMIA-NISIG). As it happened, Dr. Park was looking for somebody to represent students within the group, and so we decided to start a new IMIA-NISIG students' group. In the first few months, we contacted various informatics stakeholders in an attempt to identify nursing informatics students in a range of countries. We also asked students to volunteer to become more active in this endeavor or to become national representatives. Currently, we have eight active participants from Brazil, Taiwan, Korea, Canada, Japan and Israel. The role of those active members is to provide monthly updates about informatics developments in their countries, or internationally. We created an online community (Google group https://groups.google.com/forum/#!forum/imianisig-student) that enables easy communication among group members. Currently, we have about 100 group members from more than fifteen countries.

In the past year, we developed and implemented several important group activities. For example, we answered the call to help revise the IMIA's Strategic Plan, eliciting comments from our group members using email exchange and a webinar to summarize the comments. Interestingly, we discovered that one important aspect of nursing scholarship, namely promoting health equity, was not explicitly presented in the current IMIA's Strategic Plan. To fill the gap, we suggested that the global community of health informaticians should pay more attention to using technology in ways that decrease health disparities and promote health equity globally and in each particular country. We also provided the IMIA leadership with additional suggestions for future development and better student participation. Currently, our students group is collaborating on a manuscript based on this vision, arguing that the concept of health equity is one of the cornerstones of nursing and healthcare informatics.

Other group activities included monthly journal club discussions organized by one of our active members (Charlene Ronquillo, University of British Columbia, Vancouver, Canada). Ideas for the papers presented and reviewed were solicited in part from members of the group. In addition, several professional opportunities for students were distributed within our group. For example, one of our group members joined the student editorial board of a prominent journal in the field *(Methods of Information in Medicine)* after learning about the opportunity through our forum.

Currently, our group is actively involved in the organization of the upcoming biennial nursing informatics congress (one of the most important events in nursing informatics). Drawing on conversations conducted throughout the year, we submitted several proposals for presentations and panels. For example, our members expressed interest in learning more about professional and academic opportunities for emerging health informatics professionals. In order to address this need, we are organizing a panel of academic and industry leaders in nursing informatics in which participants will overview the opportunities and reflect on their personal experiences. Additionally, we are organizing a panel that will shed light on the role of nursing informatics in global health. In total, four of our proposed collaborative abstracts and panel presentations were accepted for this conference (Ronquillo et al., 2014; Topaz et al., 2014a; Topaz et al., 2014b; Topaz et al., 2014c).

Actively participating in and managing a professional students' group has been a constructive experience, one that has provided me and other group members with diverse opportunities to continue developing our skills and knowledge. Furthermore, we were able to collaborate with visionary leaders and, we hope, affect the development of our discipline on a global level. Throughout the journey, we were generously supported and encouraged by the senior leadership of our group, especially the Chair, Dr. H. A. Park. The field of nursing informatics is rapidly expanding, and I anticipate that this group will continue to generate meaningful and exciting discourses in the future. Interested students are invited to join us at https://groups.google.com/forum/#!forum/imianisig-student.

What follows are suggestions for fellow doctoral students to consider when organizing or participating in similar efforts:

- Active collaboration is a key to success: Actively seeking participants and creating opportunities for contribution/participation are important components of the group's success.
- Use technology to enhance communication: Currently, many free tools are available to connect people in different locations. For example, Google Hangout or Skype can be used to conduct webinars and enable active discussions.
- Reach out and seek active collaboration with other groups/organizations: Professional organizations offer a wide range of activities to their participants (revision of a strategic plan, for example). Participation in such activities is an excellent learning opportunity.
- Delegate responsibilities: A doctoral student's life is very busy – sharing responsibilities with others is a great way to contribute while balancing your doctoral program and personal life.

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I would like to thank Charlene Ronquillo, University of British Columbia, Vancouver, Canada, for her active co-leadership of the group. Also, I would like to thank the Nursing Informatics group leadership, and in particular Dr. H. A. Park (Chair, IMIA-NI), for their active support and guidance.

Disclaimer: Information presented here is a personal reflection and might not necessarily represent the opinions of all the group members.

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An Examination of Ethical Issues Surrounding a Research Project: "The Role of Anxiety and Sleep Deprivation on Excessive Gestational Weight Gain"

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Abstract

This article describes ethical issues surrounding the design and implementation of a research project. The study, to which Principle-Based Theory is applied, explores the role of anxiety and sleep deprivation in excessive weight gain in a vulnerable population, pregnant women. The numbers of overweight and obese women of childbearing age are climbing, and these women suffer worse outcomes in pregnancy. Anxiety and sleep disturbances are also common during pregnancy, and the potential contribution of these phenomena on weight gain bears closer scrutiny. The application of Principle-Based Theory in structuring this study protects the unique needs of this population. Additional factors, such as the challenges of transitioning from the role of practitioner to that of student researcher, are also identified.

Nearly two thirds of American women of childbearing age are classified as overweight or obese, and nearly half of women who do experience pregnancy gain excessive weight (IOM and NRC(*Weight Gain During Pregnancy: Reexamining the Guidelines,* 2009). Excessive weight gain in pregnancy and failure to lose weight postpartum are important predictors of lifelong obesity and are associated with a rise in obstetric complications such as preeclampsia, gestational diabetes and cesarean births (Bodnar, Siega-Riz, Simhan, Himes, & Abrams, 2010; Chung et al., 2013; Davenport, Ruchat, Giroux, Sopper, & Mottola, 2013; Di Benedetto et al., 2012; Einerson, Huffman, Istwan, Rhea, & Joy, 2011; Gurau, Cronk, Pelliccia, & Vandenbussche, 2013; Halloran, Wall, Guild, & Caughey, 2011; Hinkle, Sharma, & Dietz, 2010; Kraschnewski et al., 2013; Magann, Doherty, Sandlin, Chauhan, & Morrison, 2013; Marcus, 2009; Marshall, Guild, Cheng, Caughey, & Halloran, 2014; S. H. Mehta, Kruger, & Sokol, 2011; U. J. Mehta, Siega-Riz, & Herring, 2011; Muktabhant, Lumbiganon, Ngamjarus, & Dowswell, 2012; Nehring, Schmoll, Beyerlein, Hauner, & von Kries, 2011; Thornton, May, & Pmid, 2013). Only half of pregnant women in all body mass index categories gain within the recommended range (*Weight Gain During Pregnancy: Reexamining the Guidelines,* 2009). Various

social stressors, such as single status, food insecurity, and unintended pregnancy have been linked to excessive gestational weight gain (EGWG) and are believed to be factors in the increasing rates of obstetric complications previously listed (Amorim Adegboye & Linne, 2013; Davis, Stange, & Horwitz, 2012; Hill et al., 2013; Kraschnewski et al., 2013; Lipsky, Strawderman, & Olson, 2012; Stengel, Kraschnewski, Hwang, Kjerulff, & Chuang, 2012; Wiltheiss et al., 2013). In addition, numerous studies document significant elevations of psychological symptoms in pregnancy, including depression and anxiety (Alder, Fink, Bitzer, Hosli, & Holzgreve, 2007; Correia & Linhares, 2007; Dunkel Schetter, 2011; Glover & O'Connor, 2002; Holland, Kitzman, & Veazie, 2009; Ip, Tang, & Goggins, 2009; Kinsella & Monk, 2009; Lancaster et al., 2010; Levine, Oandasan, Primeau, & Berenson, 2003; Littleton, Breitkopf, & Berenson, 2007; Marcus, 2009). Women with higher levels of anxiety, especially pregnancy-related anxiety, have been found to be 1.5 times more likely to have a preterm birth, when all other socio-demographic and medical/obstetrical risks were controlled (Alder et al., 2007; Bodnar et al., 2010; Chung et al., 2013; Collins, Rankin, & David, 2011; Correia & Linhares, 2007; Dunkel Schetter, 2011; Glover & O'Connor, 2002; Gurau et al., 2013; Halloran et al., 2011; Holland et al., 2009; Ip et al., 2009; Johnson & Slade, 2003; Kinsella & Monk, 2009; Lancaster et al., 2010; Levine et al., 2003; Littleton et al., 2007; Marcus, 2009). Other implications of maternal anxiety are lifelong fetal neurodevelopmental changes caused by "fetal programming" of the hypothalamic-pituitary-adrenal (HPA) axis through activation of the maternal HPA axis (Beydoun & Saftlas, 2008; Martinez, Cordero, Campion, & Milagro, 2012; Mulder et al., 2002; Sarkar, Bergman, O'Connor, & Glover, 2008; Sarr, Yang, & Regnault, 2012). Adverse effects later seen in the child and adolescent include learning disorders, behavioral disorders, and decreased gray matter density (Beydoun & Saftlas, 2008; Gress-Smith, Luecken, Lemery-Chalfant, & Howe, 2012; Kinsella & Monk, 2009; Marcus, 2009; Martinez et al., 2012; Mennes, Stiers, Lagae, & Van den Bergh, 2006; Mulder et al., 2002; Muzik, Marcus, & Flynn, 2009; Ruchat & Mottola, 2012; Sarkar et al., 2008; Sarr et al., 2012; Swanson, Flynn, Wilburn, Marcus, & Armitage, 2010; Taveras, Gillman, Kleinman, Rich-Edwards, & Rifas-Shiman, 2013). In addition to mood alterations, poor sleep is commonly reported during pregnancy (Balendran, Champion, Jaaniste, & Welsh, 2011; Facco, 2011; S. Y. Lee & Hsu, 2012; Nodine & Matthews, 2013; Pantaleo, Hening, Allen, & Earley, 2010; Ramirez et al., 2013; Sarberg, Josefsson, Wirehn, & Svanborg, 2012; Shiga, Murata, & Kodama, 2012; Vadasz, Ries, & Oertel, 2013). When combined with the hormonal changes in pregnancy, the fetal and maternal outcomes of sleep deprivation are magnified (Dunkel Schetter, 2011; Okun, Kiewra, Luther, Wisniewski, & Wisner, 2011; Okun et al., 2012; Okun, Schetter, & Glynn, 2011). Three key fetal status indicators – growth, gross movement, and heart rate reactivity – are negatively affected by sleep deprivation, yet the mechanism by which these changes occur is not clear (Dunkel Schetter, 2011; Kinsella & Monk, 2009).

Sleep Deprivation in Pregnancy

Chronic sleep deprivation has been found to have a detrimental effect on fat and glucose metabolism and weight gain (Glover & O'Connor, 2002; Hedman, Pohjasvaara, Tolonen, Suhonen-Malm, & Myllyla, 2002). Alterations in metabolism and secretion of

hormones that control appetite, ghrelin and leptin result in reduced activity and overeating in general populations, but this effect has only recently been specifically measured in pregnancy (Misra & Trudeau, 2011; *Weight Gain During Pregnancy: Reexamining the Guidelines,* 2009). Elevated leptin levels during pregnancy are associated with higher blood pressure and preeclampsia risk in the mother and higher adiposity of the neonates. Qiu also found that leptin was elevated in overweight and obese pregnant women with less than five or more than nine hours of sleep per night (Qiu, Frederick, Sorensen, Enquobahrie, & Williams, 2014). This finding was absent among lean mothers (Qiu et al., 2014). Such objective measurement tools as polysomnography and actigraphy that measure quantity and quality of sleep have rarely been used in the perinatal population (Okun, Tolge, & Hall, 2014). Restless legs syndrome, also known as Willis-Ekbom disease, occurs during roughly a third of pregnancies (Balendran et al., 2011; Cesnik et al., 2010; Dzaja, Wehrle, Lancel, & Pollmacher, 2009; Gao, Schwarzschild, Wang, & Ascherio, 2009; Hubner et al., 2013; Nodine & Matthews, 2013; Pereira, Rocha e Silva, & Pradella-Hallinan, 2013; Picchietti, Wang, & Picchietti, 2012; Ramirez et al., 2013). This sleep disorder is more common among obese women, especially as maternal age and parity increase (Gao et al., 2009; Hubner et al., 2013). However, studies have only recently examined the effects of this condition on pregnancy outcomes, possibly a marker of risk or cause of preeclampsia (Pereira, Pradella-Hallinan, & Lins Pessoa, 2010; Pereira et al., 2013; Picchietti et al., 2012; Ramirez et al., 2013). Women who are obese and/or gain excessive weight while pregnant are also more likely to have sleep-disordered breathing, a known risk factor for poor obstetric and fetal outcomes (Davies et al., 2010; Facco, 2011; Kapsimalis & Kryger, 2009; Nodine & Matthews, 2013; Pack & Pien, 2011). Unanswered questions remain regarding accurate diagnosis and treatment of these and other perinatal sleep disorders and any preexisting or exacerbated anxiety disorders.

Sleep and Perinatal Anxiety

The literature thus far appears to indicate that the interaction of sleep and perinatal depression could be significant (K. A. Lee, McEnany, & Zaffke, 2000; S. Y. Lee & Hsu, 2012; Marcus, 2009; Nicklas et al., 2013; Nodine & Matthews, 2013; Okun, Kiewra, et al., 2011). However, a gap exists in examining the relationship between sleep and anxiety, specifically state, trait, and pregnancy-related anxiety (Marcus, 2009; Okun, Kiewra, et al., 2011). Likewise, while there has been some investigation of the interaction of some social and behavioral factors on weight gain in pregnancy, there has been no specific study of sleep deprivation, anxiety and EGWG. Given the common occurrence of each of these conditions in pregnancy, the frequent cluster of these conditions bears closer examination.

The Study of Sleep, Anxiety and Excessive Gestational Weight Gain

My planned study will explore the role of sleep and anxiety on gestational weight gain while addressing the following priority research areas of the National Institute of Nursing Research (NINR): Promoting Health/Preventing Disease and Improving Quality of Life, with potential for impacting a third area, Eliminating Health Disparities. Preexisting obesity and excessive gestational weight gain are most common in vulnerable popula-

tions with the highest socioeconomic and obstetrical risks (Alanis et al., 2010; Blomberg, 2011; Bodnar et al., 2011; Bodnar et al., 2010; Chugh, Friedman, Clemow, & Ferrante, 2013; Davies et al., 2010; Krans & Chang, 2012; *Weight Gain During Pregnancy: Reexamining the Guidelines,* 2009). My study has two aims:

(1) To examine whether an association exists between sleep deprivation and anxiety (state, trait, and pregnancy-related) during pregnancy.
(2) To examine the effects of sleep deprivation and anxiety (state, trait, and pregnancy-related) on excessive gestational weight gain.

Application of Principle-Based Theory

As I design and conduct this research, I am called to consider the ethical issues at play for the researcher, the subjects, and their care providers. First of all, I must ensure that this is valid research with scientific merit. The summary presented above supports this claim. The conditions I am studying are common and serious in pregnancy and require objective evaluation. My ultimate intention is to gather the data ethically, analyze it properly, and disseminate the findings to improve the health and well-being of pregnant women and their babies (Blehar et al., 2013). I have chosen to apply Principle-Based Theory in the ethical evaluation of the study design and in consideration of ethical issues involving the research itself. This theory comprises four basic principles: Respect for authority, Nonmaleficence, Beneficence, and Justice (Freeman, 2012). Application of these principles will aid detection of ethical conditions that arise and the consequent design of a plan to minimize or eliminate these dilemmas.

Examination of the Ethical Dimensions of the Study

The first aim of my study is "To examine whether an association exists between sleep deprivation and anxiety during pregnancy." The hypothesis is that pregnant women with high anxiety will also report greater sleep deprivation compared to pregnant women with low anxiety. This research question requires examination of mood states and sleep quality/quantity in pregnancy. The use of valid sleep and mood questionnaires and objective monitoring of sleep via actigraphy will be used to collect data. It does not include a report of findings, teaching, or counseling of the patient. If the patient does not understand this, she could feel mistreated and exploited by the researcher and clinician, undermining the trust relationship with current and future care providers and medical researchers in general. This could place at risk the principles of authority and nonmaleficence. A summary of findings will be shared with clinicians at the conclusion of data analysis, in the interest of beneficence and justice in translating research to practice.

The second aim is "To examine the effects of sleep deprivation and anxiety (state, trait, and pregnancy-related) on excessive gestational weight gain." Given that our culture has many negative stereotypes about mental illness and obesity, there may be a difference in the type of care rendered to these subjects by their care providers (Gould Rothberg, Magriples, Kershaw, Rising, & Ickovics, 2011; Herring, Henry, Klotz, Foster, & Whitaker, 2012; Stengel et al., 2012). This has the potential to be an issue of unfair, inequitable and inappropriate treatment. One way to determine the justice of their care, an ethical

dimension of the study, would be to ask the subjects what they heard (if anything) from their care providers about their mood, sleep and weight at each prenatal visit and compare the messages received by women who did and did not have anxiety, sleep deprivation, or excessive weight gain. The comparison of women with differing outcomes in anxiety, sleep and weight gain might distinguish whether maleficence was experienced by (or beneficence denied to) patients who received different messages.

Ethical Recruitment of Subjects

The method of subject recruitment must ensure equitable selection within the target research population – pregnant women – as it is a readily identified vulnerable group (Blehar et al., 2013). I plan to enroll subjects from public and private hospitals to improve the sampling of poorly represented groups such as ethnic and racial minorities and those at age extremes. These groups are also most likely to suffer these conditions and be at highest risk of poor perinatal outcomes (Fontaine, Hellerstedt, Dayman, Wall, & Sherwood, 2012; Gould Rothberg et al., 2011; Nuss, Clarke, Klohe-Lehman, & Freeland-Graves, 2006; Pawlak, Alvarez, Jones, & Lezotte, 2013; Taveras et al., 2013). I will also need to justify any compensation for participation in the study. Modest repayment for their time or for a specific cost incurred, such as for travel or parking during participation would be reasonable and necessary for recruitment and retention. There must be no perception of coercion through unwarranted material gain, safeguarding the subject's autonomy. Minimizing the subject burden in this way also exemplifies nonmaleficence.

Protection of Subjects

To further protect autonomy, a subject must believe she is free to participate in or leave the study at will and without any penalty. Her privacy must be protected. Through de-identification of the data, confidentiality and anonymity are assured. She must further understand that I am not acting as her clinician nor am I sharing her data with her clinicians. Pregnant women are consenting to participation for themselves and their vulnerable unborn child. If she misunderstands her freedom to participate in or to decline the study, or to end participation at any time, coercion may be an unintended and hidden consequence. In order to ensure informed consent, I will ask participants to repeat back to me the limited personal and fetal benefits and all potential risks incurred with participation. The goal could be, "After the subject has read the informed consent document presented at a maximum 5th grade reading level in her primary language, she accurately verbalizes to the researcher the limits and risks of her participation." When verifying true informed consent, I will pose such questions as, "Are there any benefits to you for participating in this study? Are there any risks to participating in the study? Will any information or findings we have be shared with you or your care provider? Can you choose to participate or leave the study at any time for any reason? How would you do this?" If there are any misperceptions, they must be corrected and the questions re-posed.

The competency of the subject in obtaining valid consent is essential. Moreover, the issue of informed consent is especially critical when studying a vulnerable population

(Blehar et al., 2013). The subjects may also expect that their care will be enhanced if any undue findings are revealed, mistaking their participation as being beneficial to their health outcomes. The misperception of beneficence must not be implied or allowed. The greatest gain will be for future women and children, not for the individual subjects studied. The one minor potential benefit I currently envision is that participation in the study may make the subject more aware of health-related symptoms or conditions they wouldn't otherwise consider mentioning to their care providers. At the same time, the questions posed to the subject participating in the study might lead to undue concern or unnecessary medical care. Should she be experiencing anxiety or sleep deprivation, she must be able to state clearly her understanding that this study will not provide a clinical diagnosis or treatment plan. Furthermore, if her pattern of weight gain is too rapid or too great, this will not be reported or counseled with the patient or their clinician.

Data Collection and Dissemination of Findings

Once the subjects have been properly recruited, data collection must be closely monitored to ensure safety of the subjects. For instance, in this study I must obtain actigraphy monitors that are comfortable enough to minimize further sleep disturbance in this group. Also, given that pregnant women wake at night to urinate, the device must not impose a danger of falling. These considerations further support the nonmaleficence principle. Other aspects of data collection methodology are not yet determined but will adhere to proper safety standards.

The Principle-Based Theoretical framework will be employed to safeguard the research process from design to dissemination. My faculty advisor will oversee the design of my study and consider ethical dilemmas identified through her experience in researching a similar population. I would like to have another nurse researcher evaluate the ethical dimensions of the plan and review the process at regular intervals, from data collection to publishing results. It would be valuable to witness how others correctly identify potential conflicts of interest and develop strategies of management as they evolve over time. Also, these researchers can mentor me in my own development of these skills. For example, I anticipate it will be difficult to assume the role of a detached, objective researcher after 25 years as a nurse and nurse-midwife. My clinical conditioning is to instruct, guide, and care for patients and I will not be able to do this and still expect to obtain valid data. I also have to develop a plan for what I will do when I discover – by identifying a sleep, mood, or weight concern – that a patient is at risk of illness. When will I report this and how? What do I do with this subject's data to maintain the highest ethical standard and quality research to which I aspire? How do I simultaneously protect the privacy of the subject and her health and the health of her baby? What happens when the woman does not perceive a health risk for herself but there is a clear risk to her fetus? How would I react and respond to such a situation? These are questions that must be discussed with my faculty mentors in the design of the research process, and the answers are not yet determined.

To be a sound researcher, one must competently perform all steps of the research process while adhering to the highest standards of moral and ethical behavior. Science can be promoted only in this way. To attempt to advance scientific knowledge by denying such ethical principles not only sacrifices the single study but the public trust and support of all scientific research. The stakes are too great to ignore the responsibilities inherent in the role of the nurse researcher. I look forward to the challenges ahead in this role and to the advancement of the care of pregnant women and babies that my work can provide. Sleep and mood disorders are far too common in pregnancy for science to fail to address the potential health implications. The role these conditions play among the growing numbers of women who are overweight, obese, or who gain excessively in pregnancy demands close examination. If an association is found, it will require further study of what and how obstetric and fetal outcomes result and how best to intervene, ethically and effectively.

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Cross-sectional Studies of Preventive Health Behaviors in the Presence of a Family History of Colorectal Cancer

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Abstract

This pair of studies focused on whether having a first-degree relative (FDR) with colorectal cancer (CRC) is associated with increased likelihood of engaging in preventive medical and lifestyle behaviors. The risk of developing CRC is at least doubled among individuals with an FDR with CRC. Cross-sectional surveys from the wellness program at a large midwestern university (US) and a community health care system (CHS) were analyzed. Medical behaviors (bowel endoscopy and fecal occult blood testing adherence) and lifestyle behaviors (diet: vegetable and fruit consumption; tobacco abstinence, alcohol intake, physical activity, and BMI) were compared among cancer-free adult individuals with a first-degree relative (FDR) having colorectal cancer (US $n = 229$, CHS $n = 80$) with those without such a history (US $n = 5204$, CHS $n = 821$). Individuals having FDRs affected by CRC were significantly more likely to engage in bowel endoscopy than those with unaffected FDRs in the university (56% vs 28%, $p < .001$) and community health care system (47.5% vs. 20.8, $p < .001$) settings. Having an FDR with CRC was a strong predictor for fecal occult blood testing in the university setting, (39% vs. 30%, $p = .004$) but not in the community health care system setting (21.3% vs. 14.6%, $p = .082$). Interestingly, no association was found between having an FDR with CRC and preventive lifestyle behaviors. Individuals having an FDR with CRC were more likely to undertake preventive medical behaviors but not preventive lifestyle behaviors. These results illuminate the need for future studies testing creative and effective interventions that will engage at-risk or high-risk individuals in CRC prevention.

The first study (i.e., university setting) was developed from a Doctor of Nursing Practice (DNP) course assignment. Interesting results led to the replication of the study in a second population (i.e., community health care setting). The analyses of both studies became the primary author's DNP final inquiry project.

Keywords: Cancer prevention and screening, health behavior, worksite health, colorectal cancer, diet, obesity

The purpose of this descriptive pilot study was to examine medical and lifestyle preventive behaviors among individuals having an FDR with CRC. The outcomes of the study were reported participation in medical exams and lifestyle behaviors known to reduce the risk of colorectal cancer. It was hypothesized that having a first-degree relative (FDR) with colorectal cancer would be significantly associated with medical and lifestyle behaviors.

Colorectal cancer (CRC) is the third most frequent malignancy and the third leading cause of cancer mortality in the U.S. (American Cancer Society [ACS], 2014). Risks associated with colorectal cancer may or may not be modifiable. Non-modifiable risks include age; ethnicity; race; personal history of colon polyps, colon cancer, and inflammatory bowel disease; and family history of colon polyps or colon cancer (ACS, 2014). Modifiable risks include diet high in red or processed meat and/or low in dietary fiber, physical inactivity, obesity, smoking, and heavy alcohol intake (ACS, 2014).

CRC may occur sporadically or be part of a hereditary or familial cancer syndrome. Although familial and hereditary CRCs occur less frequently than sporadic CRC, they are associated with family members having significantly higher risk of developing CRC (Butterworth, Higgins, & Pharoah, 2006). In general, individuals with a first-degree relative (FDR) with CRC are at two to three times increased risk for the disease (National Cancer Institute, 2013).

The development and course of CRC has implications for screening and health practices. Sporadic CRC has a long natural history. The progression from adenoma to a sporadic carcinoma takes approximately 10 to 15 years (Kelloff et al., 2004). In Lynch syndrome, tumor evolution is accelerated causing a shorter interval, as few as one to three years, between development of an adenoma and carcinoma (Edelstein et al., 2011).

Strong evidence exists for the prevention of CRC. For example, CRC can be prevented if pre-cancerous polyps are found early and removed during bowel endoscopy (Zauber et al., 2012). The five-year survival rate is about 90% when CRC is found and treated in an early stage, but less than 40% of CRCs are found at an early stage (ACS, 2014). Medical screening tests for colorectal cancer such as colonoscopy and fecal occult blood testing (FOBT) are frequently recommended by clinicians to help prevent CRC. Additionally, preventive health behaviors such as maintaining a normal body weight (World Cancer Research Fund [WCRF]/American Institute for Cancer Research [AICR], 2011); consuming a diet rich in fiber (Dahm et al., 2010), fruits, non-starchy vegetables, but sparing in red and processed meat (Magalhães, Peleteiro, & Lunet, 2012); and engaging in physical activity (Wolin, Yan, Colditz, & Lee, 2010) may decrease the incidence of sporadic CRC (AICR, 2011). Obesity has been associated with adenoma development (Hong et al., in press), sporadic colorectal cancer risk (Harriss et al., 2009), and increased risk of familial

CRC in men (Campbell, Cotterchio, Dicks, Parfrey, Gallinger, & McLaughlin, 2007) but not with Lynch syndrome associated CRCs (Campbell et al., 2010). Additional lifestyle risk factors for sporadic CRC include tobacco use (ACS, 2014; Zhao, 2010) and alcohol intake (Fedirko, 2011). Similarly, tobacco use (Pande et al., 2010) and alcohol intake (Cho et al., 2012) may increase risk of familial or hereditary CRC. Clinician practice may vary regarding recommendation of these preventive health behaviors to individuals at risk for familial or hereditary CRC.

Individuals with FDRs who are affected by CRC have the most to gain from engaging in preventive lifestyle behaviors. Yet little is known about whether having a close relative with CRC is associated with greater personal proclivity towards engaging in preventive clinical examinations and preventive lifestyle behaviors.

Methods

Human Research Subjects Protection

Permission was obtained from the vice president of nursing and the executive director of the oncology service line to conduct the records-based research on de-identified employee wellness program data in the community health care setting. Before commencement of the research, a formal exemption was obtained from the Purdue University Institution Review Board for the study of de-identified data from the community and university settings.

Setting

The study was conducted in two settings. The settings included a large midwestern university and a community health care system in an adjacent state.

Sample and Data Collection

In both studies, the samples included all "professional" members that volunteered to participate in a wellness programs. Study participation was restricted to only faculty and staff in the university setting and to only employees of the community health care system.

University setting. Between January and April of 2006, a voluntary health risk assessment was conducted in the university setting (US) using an online survey. Participants were required to complete a wellness screening through their own health care provider or onsite health care professional. Self-reports of height and weight were entered into the health risk assessment. Variables selected from the database were restricted to demographics and nine items that measured medical screening or preventive health behaviors.

Community setting. During January through April and August through September of 2008, a voluntary wellness screening was conducted in the community health care setting (CHS) using a paper survey distributed via interoffice mail. The screenings were provided at a wellness fair held at the three hospitals and one free-standing ambulatory

care office building within the community health care system. Registered nurses measured height using a free-standing stadiometer and weighed the participant, who was wearing work attire, using a digital scale. The paper survey was completed in advance and turned in at the wellness fair. The responses were entered into a database. Only demographic and eight pertinent variables that represented medical screening or preventive health behaviors were selected for further analysis.

Participant Characteristics

Sample demographics in the university setting (US). A comparison of the demographics between those having and not having an FDR with CRC are shown in Table 1. Of the 5,433 university employees that participated in the wellness program, 59% were female, 58% were less than 50 years old, and 93% were Caucasian. Over 4% of the university employees had an FDR with a history of colorectal cancer diagnosed before age 60. Due to the predominance of white participants, race was divided into two categories: Caucasian and non-Caucasian in the university study.

Sample demographics in the community health care system setting (CHS). In the community health care setting, of the 901 individuals who participated in the wellness program, 80 (8.9%) had an FDR with colorectal cancer. Of the 901 participants in the HCS, 87.5% were female and 56.2% were less than 50 years old. Race and ethnicity were not measured in the health care setting.

Demographics common to both settings. Age, gender, body mass index (BMI), and job position were measured in both settings. Screening bowel exams are recommended to start at age 50 in people of average risk for the development of CRC. Thus age was delineated into three categories: less than 40, 40-49, and 50 years old or older. Both male and female participants were included in the study. BMI was categorized according to the Centers for Disease Control and Prevention definition that a BMI of 24.9 or less is within normal limits, 25-29.9 is overweight, and 30 or greater is obese (CDC, 2010).

Level of education & professional position. Level of education may influence preventive lifestyle behaviors among those with an FDR with CRC (Jacobs, 2002). The professional variable in the university setting represents academic faculty and administrative staff in "salaried" positions; while the nonprofessional variable represents job classifications paid an "hourly" wage. In the community health care system setting, the professional variable is likely to represent college graduates; whereas the staff variable may represent some college, high school education, or less. Participants in both settings were categorized into a professional or nonprofessional job position variable.

Independent Variable

FDR with CRC. A first-degree relative includes an individual's parents, siblings, and children. In comparison, a second-degree relative (SDR) includes an individual's grandparents, aunts and uncles, nieces and nephews, and half-siblings. FDRs share about 50% of their genetic information as compared to about 25% in SDRs. This sharing of genetic

information is especially important in the presence of familial and hereditary colorectal cancer. In this study, we determined whether an FDR with CRC was associated with greater engagement in preventive health behaviors.

Medical Screenings (Primary Outcome Variables)

Bowel examinations. FOBT measured whether the participant received testing for occult blood in stool during the past year in the university and community health care system settings. In the university sample, "bowel endoscopy" measured whether a sigmoidoscopy was performed in the past five years or a colonoscopy was performed in the last ten years. In the community health care system sample, "bowel endoscopy" measured whether an endoscopy was performed in the past three to ten years. The type of endoscopy was not specified on the community health care system survey instrument.

Preventive Lifestyle Behaviors (Secondary Outcome Variables)

Level of physical activity. Two levels of physical activity were examined in the university setting. Moderate physical activity measured the number of days per week participants engaged in moderate intensity activities for 30 or more minutes. Moderate-intensity physical activity was transformed to a categorical variable and the responses were re-coded to 0, 1-2, 3-4, and > 5 days per week.

Vigorous physical activity measured the number of days per week participants engaged in vigorous exercise for 20 or more minutes in the university setting. The responses available to participants were 0 to 7 days per week. A categorical variable was created for vigorous physical activity and the responses were recoded to 0, 1-2, 3-4, and > 5 days per week. In the community health care system setting, vigorous physical activity represented the number of hours spent per week in "more active physical exercise" such as running or swimming. The responses available to participants included a range of seven categories from less than one hour to 12 or more hours of exercise or running 26 or more miles per week. These categories were collapsed to <1, 1-3, 4-8, and > 9 hours per week.

Dietary practices. For the purpose of both studies, consumption of vegetables was categorized into three or less and four or more servings per day. Consumption of fruit was categorized into two or less and three or more servings per day.

Alcohol intake. Quantity of alcohol intake was recoded as none, one, and two or more servings per day in both settings.

Tobacco use. Tobacco use was recoded as nonsmoker or smoker in the university setting and as never smoked, quit smoking, and smokes in the community health care system setting. Unfortunately, in the university setting the nonsmoker option did not segregate those who never smoked from those who quit smoking.

BMI. Maintaining a BMI in "healthy weight" range as identified by the CDC is a preventive health measure. The participant's BMI was calculated using measured body weight and height.

Control for Sample Selection Bias

A sample selection bias threatens the internal validity of a study by creating a sample that does not represent the population of interest (Delgado-Rodríguez & Llorca, 2004). The participants in this study were recruited in the workplace and volunteered to participate in the wellness program, avoiding the selection bias that occurs by recruiting health care seekers in a clinic setting or by requiring employees to participate in a program.

Analyses

The analyses were conducted in three phases using the Statistical Package for the Social Sciences (SPSS) Version 15.0. First, frequencies were examined on all variables. Second, bivariate associations between participant characteristics and first-degree relative with colorectal cancer were tested using chi square (X2) tests of independence. Third, the hypothesis that having a first-degree relative with colorectal cancer influences health behavior was tested using logistic regression.

Results

Sigmoidoscopy, colonoscopy, and fecal occult blood testing are medical health behaviors. In the university setting, having a first-degree relative with colorectal cancer was strongly associated with having a sigmoidoscopy or colonoscopy ($p < .001$) and fecal occult blood test ($p = .004$). However, preventive lifestyle behaviors such as moderate and vigorous exercise, consumption of fruit and vegetables, tobacco abstinence, and limited alcohol intake were not associated with having a relative with colorectal cancer. Respondents with an FDR with CRC were more likely to be overweight (BMI greater than or equal to 25 and less than 30; Table 2, $p = .03$) whereas respondents not having a first-degree with colorectal cancer were more likely to be normal weight. Having an FDR with CRC was a strong predictor of engaging in bowel endoscopy among individuals in the university setting after controlling for age, gender, race and ethnicity, and job position ($p < .001$, Table 3).

In the health care setting, having an FDR with CRC was strongly associated with engaging in bowel endoscopy ($p < .001$; Table 4), but not with participating in FOBT screening. There was no association between preventive health behaviors (i.e., vegetable and fruit consumption, limited alcohol intake, tobacco abstinence, engaging in physical activity, or BMI) and having an FDR with CRC among health care workers (Table 4). Having an FDR with CRC was significantly associated with engaging in bowel endoscopy among individuals in the community health care setting after controlling for age, gender, and job position ($p < .001$, Table 5).

Discussion

This study aimed to fill a gap in current knowledge by assessing the health behavior patterns among individuals who have an FDR with CRC. Health care provider communication is known to influence health behaviors. The recommendation to screen by a health care provider remains a strong motivational influence on screening behavior (Baron, 2010). Health care providers must have knowledge of and be willing to implement the screening guidelines to patients who are at risk for development of CRC. Such guidelines include those developed jointly by the ACS, US Multi-Society Task Force on Colorectal Cancer, and American College of Radiology as well as the preventive health guidelines jointly developed by the WCRF/AICR (Levin et al., 2008; AICR, 2011). Also, sending the health care provider a reminder to offer screening was an effective motivator in a study on workplace health promotion (Harris, Lichiello, Hannon, 2009). Colonoscopy, but not FOBT, was associated with having an FDR with colorectal cancer in the community health care system study. Clavel-Chapelon, Joseph, and Goulard (1999) found similar results in a cohort of French women in the European Prospective Investigation on Cancer (EPIC) study. Like the current study in the university and community health care system settings, other researchers found an increased uptake in colonoscopy use among individuals with an FDR having CRC (Manne et al., 2009). This may reflect a prescribing pattern among providers with a preference toward colonoscopy over other types of preventive behaviors.

Routine screening for sporadic colorectal cancer is recommended to start at age 50 because sporadic colorectal cancer tends to occur later in life. The period of carcinogenesis is shorter in hereditary cancers. For this reason, adjustments are made to the initiation of screening for individuals with a family history of colorectal cancer. For example, the first endoscopy should occur at least 10 years earlier than the first documented case in a relative (Levin et al., 2008). Also, a full screening colonoscopy to the cecum is preferred when there is a family history of colorectal cancer. While most individuals at high risk for colorectal cancer participate in some screening activity, about one in four people significantly prolong the interval between recommended screens by more than one year (Bleiker, 2005).

The participants at increased risk for colorectal cancer in the university and community health care settings were more likely to engage in preventive medical screening behaviors such as bowel endoscopy than preventive lifestyle behaviors. This is interesting given that preventive lifestyle behaviors have little risk, low cost, few complications and in fact, may actually benefit for protection against other diseases/conditions.

Strengths and Limitations

The samples from each wellness study did not have a 'clinic bias.' The participants were recruited from a workplace setting. Had the studies occurred in a clinic setting, the sample would have been biased toward the attitudes, values, and behaviors of health-seeking individuals.

There were a number of limitations of the studies of health behavior among university and health care employees with first-degree relatives that have CRC. Data were from pre-existing databases, thus, some precision was lost in variable definition. For example, the method of bowel endoscopy was not addressed by either wellness survey. A different wellness survey was used for a number of years in each setting. In addition, the survey used in the university setting did not differentiate between participants who never smoked as compared to those who recently quit. The health risks of someone who has never smoked are likely to be different from a person who smoked for a prolonged period of time and recently quit. The survey used in the health care study did not stipulate an age threshold for the cancer diagnosis in the FDR. The FDR might have been age 90 at CRC cancer diagnosis suggesting sporadic cancer or age 20 at diagnosis suggesting hereditary CRC cancer and triggering the need for a heightened bowel surveillance program. Also, 'child' was not included in the item regarding CRC in a first-degree relative. A child with CRC is a strong indicator that the CRC is likely to follow a hereditary pattern. Weight and height was self-reported in the university setting, but measured by a professional in the community setting. The participants in both settings were volunteers, which could introduce an ascertainment bias. Despite these limitations, the results of the studies provide important evidence about preventive behaviors among adults at risk for developing CRC.

Summary

The studies in the university and community health care system setting suggest that history of CRC in an FDR is associated with greater likelihood of having a bowel endoscopy. This finding was supported by the literature. FOBT was implemented by participants in the university setting with a positive family history, but not in the health care setting. Both studies showed no relationship between positive family history of CRC and preventive lifestyle behaviors (i.e., fruit and vegetable consumption, engaging in physical activity, limited alcohol intake, and tobacco abstinence). Similarly, a study by Madlensky et al. (2005) of 1,745 individuals with an FDR having breast cancer showed a relationship with engaging in medical screening, but not preventive lifestyle behaviors.

Implications for Practice

The studies conducted in the university and community health care settings demonstrate an enormous opportunity to find creative and effective methods to engage at-risk or high-risk individuals in CRC prevention.

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Table 1
Participant Characteristics by Family Medical History (FMHx) of Colorectal Cancer and Setting

	University Setting		Community Health Care Setting	
	Positive FMHx [*n* = 229] *n* (%)	Negative FMHx [*n* = 5,204] *n* (%)	Positive FMHx [*n* = 80] *n* (%)	Negative FMHx [*n* = 825] *n* (%)
Age in Years				
18-39	48 (21)	1571 (30)	11 (13.8)	265 (32.3)
40-49	64 (28)	1461 (28)	21 (26.3)	237 (28.9)
≥ 50	117 (51)	2172 (42)	48 (60.0)	319 (38.9)
Gender				
Female	131 (57)	3070 (59)	70 (87.5)	718 (87.5)
Male	98 (43)	2134 (41)	10 (12.5)	103 (12.5)
Race/Ethnicity				
Caucasian	218 (97)	4798 (93)	Not measured	Not measured
Non-Caucasian	8 (3)	339 (7)	Not measured	Not measured
Job Position				
Nonprofessional	105 (46)	2255 (44)	36 (45.0)	237 (28.9)
Professional	123 (54)	2921 (56)	44 (55.0)	549 (66.9)

Table 2
Association between Having a First-Degree Relative (FDR) with Colorectal Cancer (CRC) and Preventive Medical and Lifestyle Behaviors (University Setting)

Factors	(+) Family Hx CRC *n* = 229 *n* (%)	(-) Family Hx CRC *n* = 5,204 *n* (%)	X^2	*p*-value
Medical Health Behaviors				
Sigmoidoscopy/Colonoscopy			80.369	<.001
Yes	125 (56)	1432 (28)		
No	99 (44)	3682 (72)		
Fecal Occult Blood Test			8.4	.004
Yes	88 (39)	1534 (30)		
No	137 (61)	3575 (70)		
Preventive Lifestyle Behaviors				
Body Mass Index			6.742	.03
≤ 25	9 (4)	1805 (35)		
> 25 & < 30	90 (63)	1673 (32)		
≥ 30	76 (33)	1726 (33)		

Table 3
Logistic Regression Predicting Bowel Endoscopy (University Setting)

Predictor	*B*	*SE B*	*p*	*OR*	*95% CI*
Female Gender	-.259	.070	.000	.771	.673- .885
Age (40-49)	1.027	.119	.000	2.792	2.210- 3.528
Age (50-59)	2.666	.107	.000	14.386	11.658-17.745
White Race	.205	.114	.074	1.227	.981- 1.535
Professional	.296	.070	.000	1.345	1.173- 1.543
Relative with CRC	1.211	.156	.000	3.356	2.470- 4.560

Table 4
Association between Having a First-Degree Relative (FDR) with Colorectal Cancer (CRC) and Preventive Medical and Lifestyle Behaviors (Community Health Care Setting)

Factors	(+) Family Hx CRC *n* = 80 *n* (%)	(-) Family Hx CRC *n* = 821 *n* (%)	X^2	*p*-value
Medical Health Behaviors				
Sigmoidoscopy/Colonoscopy			29.108	<.001
Yes	38 (47.5)	171 (20.8)		
No	42 (52.5)	688 (81.1)		
Fecal Occult Blood Test			2.488	.082
Yes	17 (21.3)	120 (14.6)		
No	63 (78.8)	701 (85.4)		
Preventive Lifestyle Behaviors				
Body Mass Index			3.164	.206
≤ 25	32 (40.0)	395 (48.1)		
> 25 & < 30	23 (28.8)	238 (29.0)		
≥ 30	25 (31.3)	188 (22.9)		

Table 5
Logistic Regression Predicting Bowel Endoscopy (Community Health Care Setting)

Predictor	*B*	*SE B*	*p*	*OR*	*95% CI*
Female Gender	.156	.278	.574	1.169	.678-2.015
Age (40-49)	-2.777	.315	.000	.062	.034- .115
Age (50-59)	-1.602	.212	.000	.201	.133- .305
Professional	-.039	.035	.271	.962	.897- 1.031
Relative with CRC	.982	.267	.000	2.671	1.583- 4.507

Theoretical Model for Music Therapy in Older Adults with Dementia

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Abstract

Music has been used in a variety of settings as a therapeutic tool. Music therapists use music as a medium to connect with patients and improve their quality of life. These effects seen firsthand by music therapists and clinicians are not well supported in the research literature due to the lack of well-developed, well-tested theories. The aim of this paper is to develop and describe a conceptual model of music therapy in older adults with dementia that will be instrumental in music therapy knowledge development and nursing care initiatives. For the purpose of this paper, terms encompassing both "music therapy", "music", and "music interventions", "elderly", "older adults" were used in order to find any current theoretical explanations as to how music works with cognitively impaired older adults in both the context of music therapy and everyday life. Four databases (PubMed, CINAHL, Cochrane Library, Scopus) were searched with no restriction on language or year of publication. Theories were synthesized to create a new theoretical model of Music Therapy in Older Adults with Dementia. The newly proposed theoretical framework of music therapy in older adults with dementia incorporates five working factors from the Heuristic Working Factor Model for Music Therapy. The purpose of this model is to provide a framework of study for researchers, who are interested in how music influences older adults with dementia.

Introduction

> *Music, uniquely among the arts, is both completely abstract and profoundly emotional. It has no power to represent anything particular or external, but it has a unique power to express inner states or feelings. Music can pierce the heart directly; it needs no meditation … and there is, finally, a deep and mysterious paradox here, for while such music makes one experience pain and grief more intensely, it brings solace and consolation at the same time (Sacks, 2007, p. 329-330).*

These words by a prominent neurologist, Dr. Oliver Sacks, in his book, *Musicophilia,* sum up a volume of anecdotal evidence about how music acts as a therapeutic agent with patients at times when no other therapies are successful. Working as a newly certified physician at Beth Israel Medical Center in the Bronx in the late 1960s, he saw

firsthand how his elderly patients diagnosed with psychiatric and neurologic disorders responded to music in ways that they did prior to their hospitalization. Thus was laid the foundation for a series of case studies of how music transforms the lives of individuals who are otherwise considered a burden to society. His work and the work of various music therapists have inspired this paper, which aims to develop a new theoretical model of music therapy in older adults with dementia.

Music, a powerful agent to affect emotions, has been used in a variety of settings as a therapeutic tool. As a therapy technique, music has successfully helped patients across the lifespan, from newborns to centenarians, and across the health continuum (Briggs, 2011). Promising results seen firsthand by music therapists and clinicians are not well supported in the research literature, however. One of the reasons proposed for such a gap is the lack of theory behind music therapy driven research (McDermott, Crellin, Ridder, & Orrell, 2012). The theories that do exist either have not been tested or have not been developed in sufficient detail to generate new scientific knowledge. The aim of this paper is to develop and describe a conceptual model of music therapy in older adults with dementia that will be instrumental in music therapy knowledge development and nursing care initiatives. Development of a theoretical framework for the use of music among the elderly with dementia will assist future research and make it easier to translate best evidence into clinical practice.

Music Therapy Defined

A distinction must be made first between music therapy and therapeutic use of music in the general population. Music therapy is defined as: "The clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program" (American Music Therapy Association, n.d.). Music intervention, whether it is in recorded form or live, does not require the presence of a music therapist and can affect individuals in many different ways. The difficulty in identifying music therapy as a concept is its complexity in terms of both observable and non-observable effects. In addition, music is diverse and its effect varies by genre, country of origin, and style. Even though music therapy may be used as a nursing intervention, it exists as a field separate from nursing, thus making it difficult to identify as a separate concept unique to nursing. Music therapy, rather, is an interdisciplinary science, as depicted in Figure 1. For the purpose of this paper, the terms "music therapy," "music," and "music interventions" were used in order to find current theoretical explanations for how music works with cognitively impaired older adults in the context of music therapy as well as in everyday life. However, future knowledge development in this area should separate the concepts of music therapy and music intervention and should distinguish between theoretical frameworks of what could be very different mechanisms of action for each concept. Four databases (PubMed, CINAHL, Cochrane Library, Scopus) were searched with no restriction on language or year of publication. Theories were synthesized to create a new theoretical model of Music Therapy in Older Adults with Dementia.

Nursing, as an applied science and much like music therapy, borders medicine and psychotherapy research (Fig. 1). Music engages by "arousing, guiding, organizing, focusing, modulating perception, attention, and behavior in affective, cognitive, and sensorimotor domains" (Thaut, 2005). The true nature of the mechanism underlying music's engagement in three domains (affective, cognitive, and sensorimotor) and its effect on human behavior and health outcomes is unknown. Stemming from these assumptions, theoretical models can be developed and tested to enrich current knowledge about how music influences individuals with dementia. Theory-based knowledge informs best practices in the field of music therapy (Robb, 2012). The creation of theories that contradict each other and are generated from different scientific perspectives will propel scientific knowledge, as research questions evolve in the effort to validate certain theories.

State of the Theoretical Science

Recent research in the area of music therapy and its effect on dementia has been inconclusive. McDermott and colleagues point to contradictory results in the eighteen studies identified by the authors as exploring the behavioral and psychological effects of music therapy on older adults with dementia (McDermott et al., 2012). These differences prevented a consensus among the experts as to the extent that music therapy affects older adults with dementia. One of the reasons for the inconclusive results, the authors say, is the lack of a theoretical framework. "It may be important for a future music therapy study to redefine what will be the realistic and clinically relevant goal for this population on the basis of a clear theoretical framework" (McDermott et al., 2012, p.792).

Spiro (2010) focuses on three aspects of dementia that seem to be affected by music therapy: memory and language retention, mood and depression, aggression and agitation. Positive results of music and music therapy seen in each of the domains are promising but require a "deeper exploration of the processes" (Spiro, 2010, p. 894). A theoretical framework would be useful in that it would provide a theory of the mechanism behind the action and results of music therapy on a number of psychological and behavioral outcomes.

A recent Cochrane systematic review of music therapy for people with dementia offers "no substantial evidence to support nor discourage the use of music therapy in the care of older people with dementia" (Vink, Birks, Bruinsma, & Scholten, 2004, p. 2). Some of the reasons include: low methodological quality of the studies reviewed, lack of a theoretical framework, and poor rigor in the quality of research in this area (Vink et al., 2004). At the same time, a number of small-scale studies report significant findings in using music for a number of behavioral and psychological outcomes, such as depression, mood, agitation, and social engagement (Sherratt, Thornton, & Hatton, 2004a). Heterogeneity in the results reported across these studies may be overcome by using a theoretical model that defines clearly the concepts and the relationship of those concepts.

Existing Theoretical Models

The purpose of a theoretical framework is to present related concepts that "characterize and provide a mental image of a phenomenon" while being an essential element in evidence-based clinical research (Burns, 2012). Based on such models researchers can test underlying processes and identify variables that are clinically significant health outcomes (Burns, 2012). "A clear theoretical conceptualization with a proposed mechanism of action for music can help to guide selection of outcome measures, which in turn would clarify any beneficial effects of music" (Robb, Burns, & Carpenter, 2011, p. 344).

A few theoretical frameworks have been proposed to clarify the mechanism behind music therapy, and one of the most widely cited is the progressively lowered stress threshold (PLST) model by Hall and Buckwalter (1987). This framework distinguishes between three types of behavior: baseline (normative), anxious, and dysfunctional (Hall & Buckwalter, 1987). As the stress level of an individual rises it can reach the level of anxious behavior and soon become dysfunctional (Fig. 2). Music may decrease outside stress and return the individual to his/her functional behavior. This model has been especially used in patients with dementia. As the disease progresses and patients are unable to process negative stimuli and stressful environments they become withdrawn from their perception of society, unable to verbally cope with outside stress. Music may act as an agent to calm a patient and help him/her return to more functional behaviors. A number of research studies have utilized the PLST model as a theoretical framework to describe the effect of music intervention on older adults with dementia (Cox, Nowak, & Buettner, 2011; L. A. Gerdner & Buckwalter, 2013; Joosse, 2012; Sung, Lee, Li, & Watson, 2012a) and to further refine the model itself (Cheung, Chien, & Lai, 2011). The PLST model, as useful as it has been, does have elements that have not been explored in great detail by researchers. For example, Hall and Buckwalter (1987) characterize stressors as "perceived stressors," which cannot be easily identified and studied in a person with severe dementia. It has been proposed that the level of stress threshold be determined by the severity of brain deterioration, but as research has shown this association does not always hold true for all dementia patients (Sherratt, Thornton, & Hatton, 2004b).

Stemming from PLST, a theory of Individualized Music Intervention for Agitation (IMIA) has been proposed by Gerdner (1997). It provides a mid-range theoretical framework for understanding how music reduces the level of stress in a person with dementia who is exhibiting signs of agitation (Fig. 3). Music can act as a reminder of pleasant memories from the past, thus producing a soothing effect on older adults with dementia. Memories from the past associated with music may also enhance recall and retention of long-term memory storage. Lastly, music may be a stimulus that is easily recognizable by the person with dementia who often feels lost in an unfamiliar environment (Gerdner, 2000; Sung, Lee, Li, & Watson, 2012b). Few studies have attempted using IMIA as their theoretical framework (Lou, 2001), and more research is needed to test the relationship between proposed concepts and the effect of music therapy in older adults with dementia.

Using IMIA as a starting point and combining psychological and physiological responses that lead to improved health outcomes, the theory of Music, Mood, and Movement (MMM) aims to paint a more complete picture of music's effect on initiation and maintenance of physical activity (Murrock & Higgins, 2009). Even though the authors' main objective is to look at the initiation and maintenance of physical activity, music as a concept plays a large role in the theoretical model. It incorporates a person's psychological and physiological responses to music thus making each assumption a testable hypothesis (Fig. 4). The authors specifically relate this theory to nursing practice and research and have provided concrete examples of environments to which this theory can be applied, such as nursing homes, hospitals, waiting rooms, and homes (Murrock & Higgins, 2009). MMM does not distinguish among modes of music delivery, whether by the individual him/herself, for example, or by the music therapist.

Perhaps the most inclusive theory of music and its effect on the brain comes from the German Center for Music Therapy Research at the University of Applied Sciences in Heidelberg, Germany. Due to multiple theories in music therapy research, as described above, the team at the university has attempted to develop an inclusive model of the most effective factors in music therapy (Hillecke, Nickel, & Bolay, 2005). This model will serve as a building block for music therapy theory synthesis. The individual concepts, relationships, and the theory's applications are discussed in the next section.

Heuristic Working Factor Model for Music Theory

The first factor (or concept) is *attention modulation* or the *attentiveness* factor. The factor posits that music has the power to attract attention. Musical sounds distract, relax, and produce an anxiolytic effect that is often cited in research and serves as an underlying theory for pain therapy with autistic children (Hillecke et al., 2005). The second factor is described as *emotion modulation*. As evidenced by functional neuroimaging, music is effective in modulating limbic and paralimbic brain structures, which are ultimately responsible for emotion response (Hillecke et al., 2005). Berlyne (1971) contends that a pleasant sensory stimulus can have a "facilitating, clarifying, organizing, and amplifying function in the perception and analysis of nonaesthetic objects and behaviors" (Thaut, 2005). Initial emotional response and the modulation of such a response later in order to eliminate previous negative response have been observed in work with adults who suffer from Post-Traumatic Stress Disorder (Blanaru et al., 2012). It is this response to music that individuals experience when faced with something tragic or joyous. Some forms of mental illness can been seen as emotional disturbances (Hillecke et al., 2005), and if such is the case, music can be a powerful emotional modulator and lead to improved health outcomes in those specific conditions.

The third concept is *cognition modulation* or cognitive factor. Music and the brain have a reciprocal relationship, since music is produced in the brain, and the brain engages in processing music. Understanding music, like language, requires cognition and memory processes (Hillecke et al., 2005). This factor becomes important in music therapy facilitating dementia patients' adaptation to living in long-term care facilities as it stimulates

cognition in the elderly during the adaptation process (Koelsch, 2009). The fourth factor is called *behavior modulation* or *motoric behavioral factor.* This factor comes into play when music is used therapeutically to improve the gait of stroke and Parkinson's patients (Hillecke et al., 2005). It has also been used as a support for intonation-based therapy used with chronic Broca's aphasia patients (Schlaug, Marchina, & Norton, 2009). This factor is especially important in learning new behaviors and is used as a theoretical framework for behavioral music therapy (Hillecke et al., 2005).

The last factor addresses music as a way to communicate. The *communication modulation* or *intrapersonal* factor is important in nonverbal communication, which is often the only way for patients in severe stages of dementia to communicate. Singing in a group and being part of something larger can evoke feelings of communal spirit and increase ties between group members (Hillecke et al., 2005). The communication modulation factor may become crucial for understanding how older adults with dementia communicate with each other.

Theoretical Framework of Music Therapy in Older Adults with Dementia

The model (Figs. 5 and 6) provides a theoretical framework that ties dementia-related
Figure 5. Theoretical model for the use of music therapy in older adults with dementia
health changes (DRHC) to music therapy and health outcomes. It depicts change over time in five major domains related to dementia and aging. This model uses the Heuristic Working Factor Model of Music Therapy as a foundation from which to theorize the effect of music therapy for individuals, whether they are just listening on their own or having an interaction with a music therapist. It does not distinguish between different types of music interventions, but rather focuses on attributes of the music experience that might be relevant to all types of music therapy. Five factors of the model are represented by five concentric circles, all having a central meeting point. Due to the complex nature of music therapy's effects these circles are defined separately, but together form the unique features of music therapy that are the core of the music intervention (see Fig. 6).

The newly built theory of music therapy in older adults with dementia incorporates five working factors of music therapy. It takes into account the attributes of music therapy and how those attributes contribute to change over time in behavioral and psychological outcomes for older adults with dementia. It is designed with a holistic nursing perspective of a patient-centered approach where the experience of music therapy encompasses five domains of DRHC. The power of music transcends human nature by affecting attention, emotions, cognition, motoric behavior, and socialization in older adults with dementia. The DRHC and change over time in those domains as the person experiences music therapy are the highlights of the proposed theoretical model. This model would consider not only the psychological and physiological responses to music (as seen in the Murrock & Higgins model in Fig. 4), but also the physical, cognitive, and spiritual.

In order to understand how music therapy might influence an older adult with dementia in different ways, it is necessary to identify the affected domains and highlight the changes in a systematic manner. A number of physiological changes have been observed in aging related to dementia and are classified under the *physiological domain* of DRHC. Decreased volume of the brain and plasticity are often seen in brain images of patients with early onset dementia. Brain atrophy starts earlier in men, but the overall rate of atrophy is higher in women. As an individual ages, there is a decreased response in the immune system, with the antioxidant defense system not acting as efficiently as in younger years, and an increase in the number of free radicals (Baquer et al., 2009). The endocrine system undergoes a number of changes, including changes in the function and structure of endocrine cells, which in turn alter hormones and receptor site regulation (Baquer et al., 2009). Previous studies have suggested an association between high levels of homocysteine and depression in older adults with dementia. Further, previous research has found an association between depression and cortisol (van der Linde, Stephan, Savva, Dening, & Brayne, 2012).

A number of psychosocial changes are seen in older adults with dementia. The nature and number of social relationships change, as older adults who progress through the course of the disease are less likely to socialize with family and friends. Caregiver burden was found to be highly correlated with the severity of the older adult's psychiatric symptoms and behavioral disturbances (Mohamed, Rosenheck, Lyketsos, & Schneider, 2010). Social isolation, loneliness, and decreased social engagement of older adults with dementia have been associated with increased cognitive impairment and increased symptoms of depression and anxiety (O'Luanaigh et al., 2012).

Physical changes in persons with dementia include gait instability, frailty, and functional disability, increasing the risk of falls as much as two or three times compared to older adults without dementia (Kröpelin, Neyens, Halfens, Kempen, & Hamers, 2013). When comparing older adults with and without dementia, pain is associated with physical inactivity in older adults with dementia (Plooij, Scherder, & Eggermont, 2012). Older adults between the ages of 65 and 74 with chronic diseases have a higher risk of mortality compared to healthy older adults (Kane, Shamliyan, Talley, & Pacala, 2012).

Progressive loss of memory and cognitive functioning fall under the cognitive domain of DRHC. Short- and long-term memory are affected in individuals with different degrees of dementia. Some of the hallmark signs of mild-cognitive impairment (an intermediate stage between the cognitive changes of normal aging and dementia) include getting lost in a familiar neighborhood, forgetting how to start a car, and not being able to perform activities of daily living (Geda, 2012). Older adults with cognitive impairment show deficits in dual-task performance, which is associated with decreased levels of executive function (Makizako et al., 2013).

Spiritual domain in DRHC includes religiosity and religious beliefs. There is a growing body of literature in which increased religion and religiosity have been associated with

improvement in a number of health outcomes, such as incidence of illness, quality of life, and decreased mortality (Oman, Kurata, Strawbridge, & Cohen, 2002). Religion refers to an organized way of worshiping and encompasses a set of beliefs, practices, and symbols designed to bridge the gap between the individual and the higher power (Koenig, George, & Titus, 2004). Religiosity is defined by religious affiliation, religious activity, and religious beliefs (Bjarnason, 2007). Religiosity has been linked to resilience later in life (Manning, 2013; Ramsey, 2012). Evidence suggests that older adults, regardless of culture, face similar changes in health and in functional status, and when confronted with those changes they turn to their religious, spiritual, and cultural beliefs (Koenig, 2006).

The clinical profile of an older adult with dementia includes behavioral symptoms such as aggressiveness, wandering, apathy, memory loss, depression, anxiety, and aggression (Van der Mussele et al., 2013). The etiology of these behavioral symptoms is not fully known. The PLST model, described above, attempts to identify the underlying mechanism of stress level crossing the threshold line and manifesting itself in a dysfunctional behavior such as anxiety or aggression. In Gerdner's model the individualized music intervention targets agitation which, as a result of lowered threshold, manifests itself in persons with dementia. However, these models are missing the key component as to why music therapy has shown potential in helping older adults with dementia. By including the Heuristic Working Factor Model for Music Theory in the proposed model, new research questions and theories can emerge that will elucidate the mechanism of music therapy. More important, with new brain imaging techniques and developments in the field of neuroscience the effect of music therapy can now be linked to physiological, cognitive, physical and psychosocial, and spiritual health outcomes.

Health Outcomes

Several health outcomes have already been explored in music therapy research on older adults with dementia. For instance, music has been shown to have a beneficial effect on decreasing agitation in institutionalized older adults with dementia (Chang, Huang, Lin, & Lin, 2010; Ledger & Baker, 2007; Lin et al., 2011). With anxiety being one of the major behavioral symptoms in older adults with dementia, previous research has shown lessened anxiety levels with the use of music therapy (Sung, Chang, & Lee, 2010). In older adults with dementia music has been used to improve mood and depression, and the results have indicated lessened depression over time in that population (Spiro, 2010).

Most studies that report the beneficial effects of music do not use a theoretical framework (Sherratt et al., 2004a; Spiro, 2010). The proposed model expands on a variety of health outcomes that have or have not yet been tested in older adults with dementia. By grouping health outcomes into five domains, researchers can now investigate new hypotheses with a systematic approach.

Implications for science development

Knowledge development in nursing science and music therapy has focused on identifying the underlying mechanism of music therapy and how music therapy can be used in nursing to alleviate some of the behavioral symptoms of older adults with dementia. The nursing perspective takes into account the entire person and his/her trajectory in health and illness states. The purpose of the Theoretical Framework of Music Therapy in Older Adults with Dementia is to contribute to the discipline of nursing knowledge by connecting DRHC with relevant health outcomes through the use of music and music therapy.

The contribution of the proposed theoretical framework to the discipline of nursing manifests itself in multiple ways. First, it generates a number of testable hypotheses. A researcher who is interested in the physical health outcomes in the elderly, such as gait speed and muscle strength, would hypothesize that through music therapy's motoric behavior component older adults undergoing music therapy will experience increased upper-body strength and gait speed. Second, additional situation-specific theories can emerge, separating five working factors of the music therapy hypothesis into individual theories applicable and unique to a specific population and setting. Such theory development will contribute greatly to knowledge development in nursing. Nurses, being on the frontline of caring for patients, have the ability to use music as a cost-effective and safe alternative. One of the purposes of this model is to elevate the status of music and show its complexity in achieving positive health outcomes in older adults with dementia.

Conclusion

Therapeutic use of music extends to a variety of patients, cultures, languages, and settings. Its power often lies in its being nonverbal communication; it is specifically needed when words are no longer the main line of communication. Older adults diagnosed with dementia lose the ability to use words to connect with the outside world as the disease progresses. Music has been shown to improve quality of life in older adults with dementia via different ways. So far there have been a limited number of theories attempting to connect underlying theoretical explanations with observable positive health outcomes. The proposed theoretical framework suggests multiple pathways that music therapy can affect in older adults with dementia.

The newly proposed theoretical framework of music therapy in older adults with dementia brings five working factors from the Heuristic Working Factor Model for Music Therapy into connection with dementia-related health changes and health outcomes. The purpose of this model is to provide a framework of study for researchers who are interested in how music influences older adults with dementia. In a world of research that aims to be culturally appropriate, music therapy is a highly modifiable therapy. The community of scholars dedicated to this field certainly hopes that music can achieve its potential – to bring comfort and consolation in times of grief.

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Figure 1 **Scientific perspectives on music therapy**

Figure 2 **Progressively lowered stress threshold in adults with progressive degeneration of the cerebral cortex (Alzheimer's Disease and Related Disorders)**

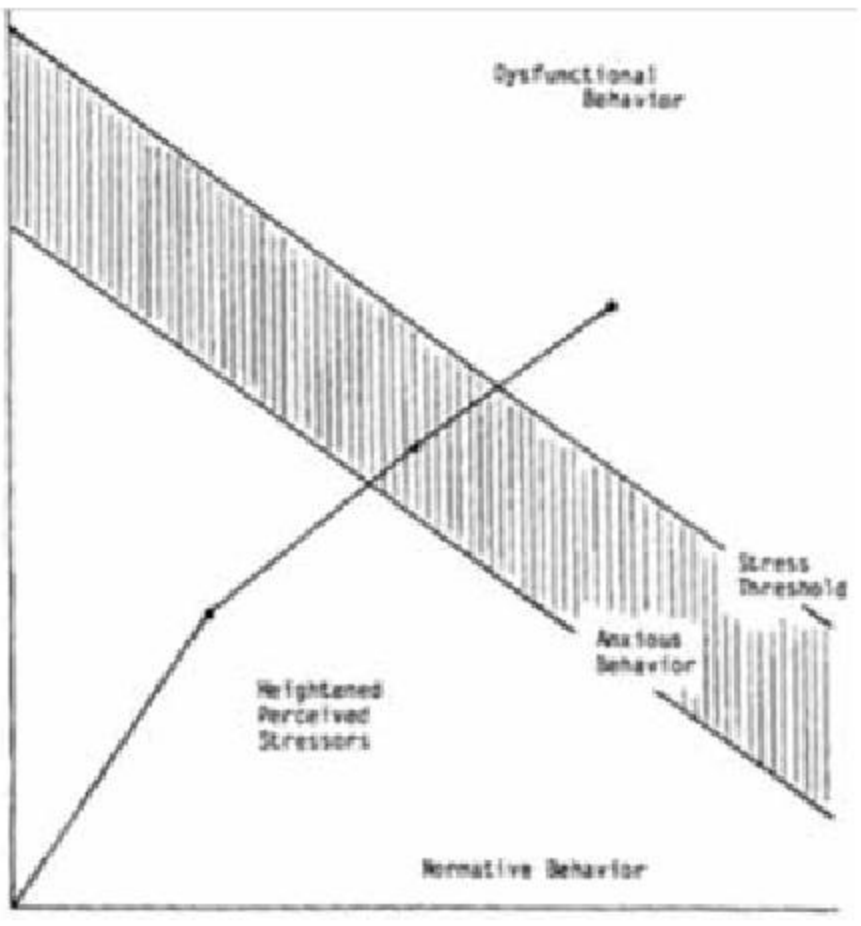


Figure 3 **Theory of Music, Mood, and Movement (MMM) (Murrock & Higgins)**

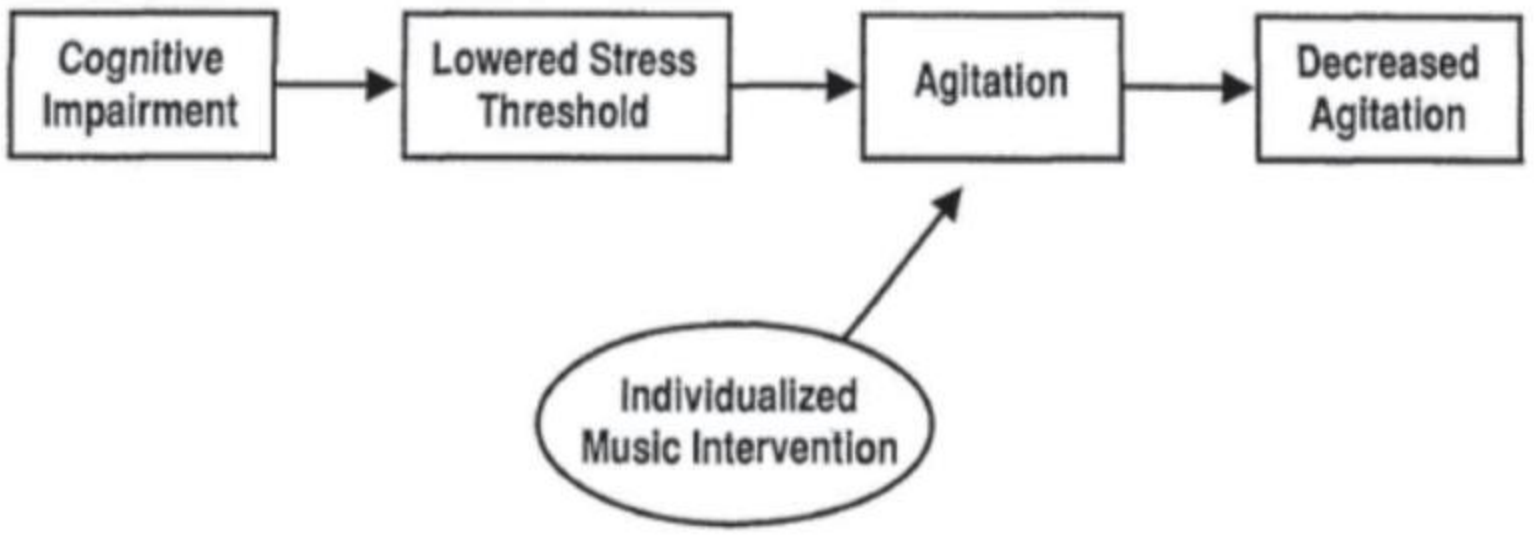


Figure 4 **Theory of Music, Mood, and Movement (MMM) (Murrock & Higgins)**

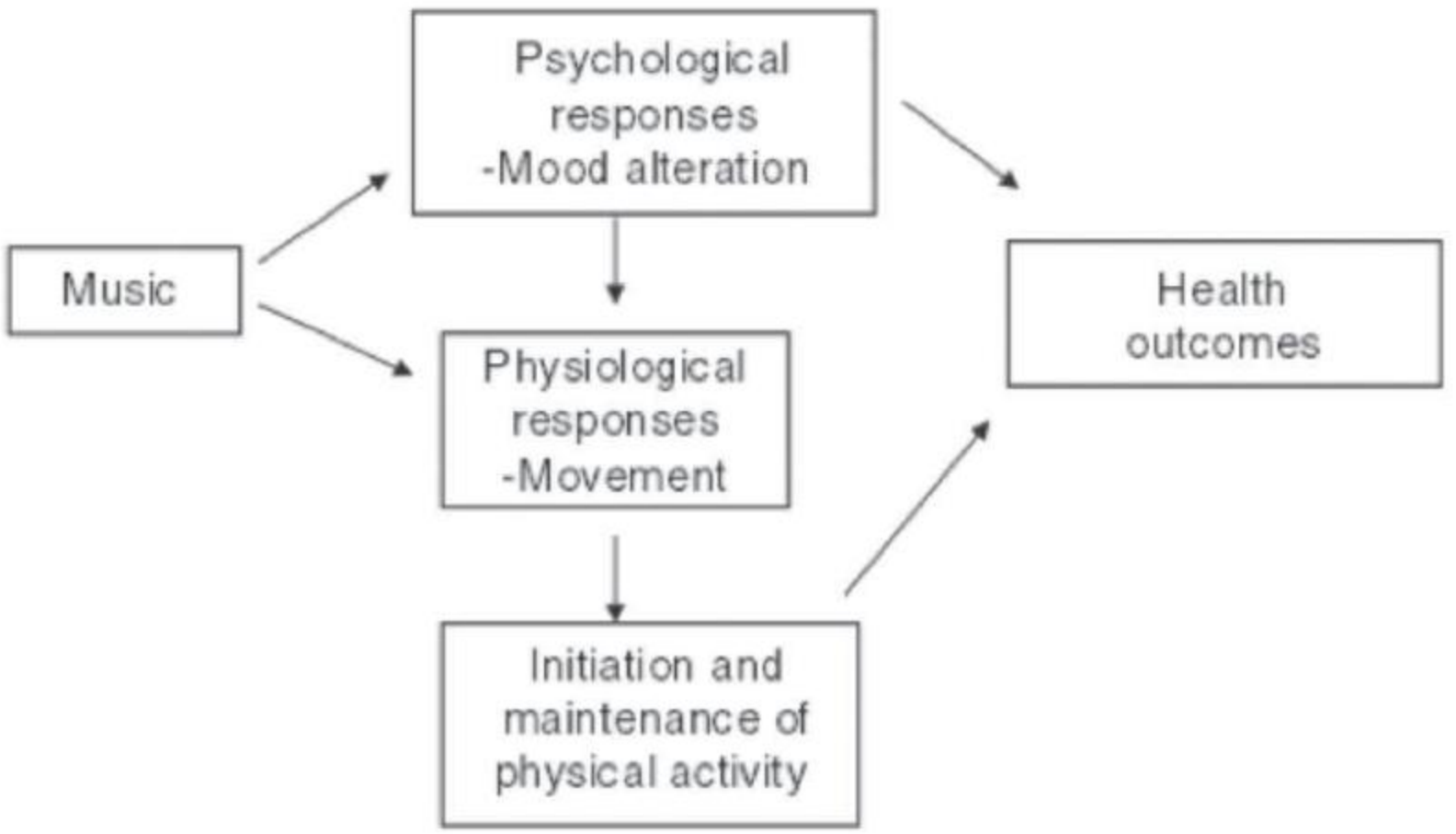


Figure 5 **Theoretical model for the use of music therapy in older adults with dementia**

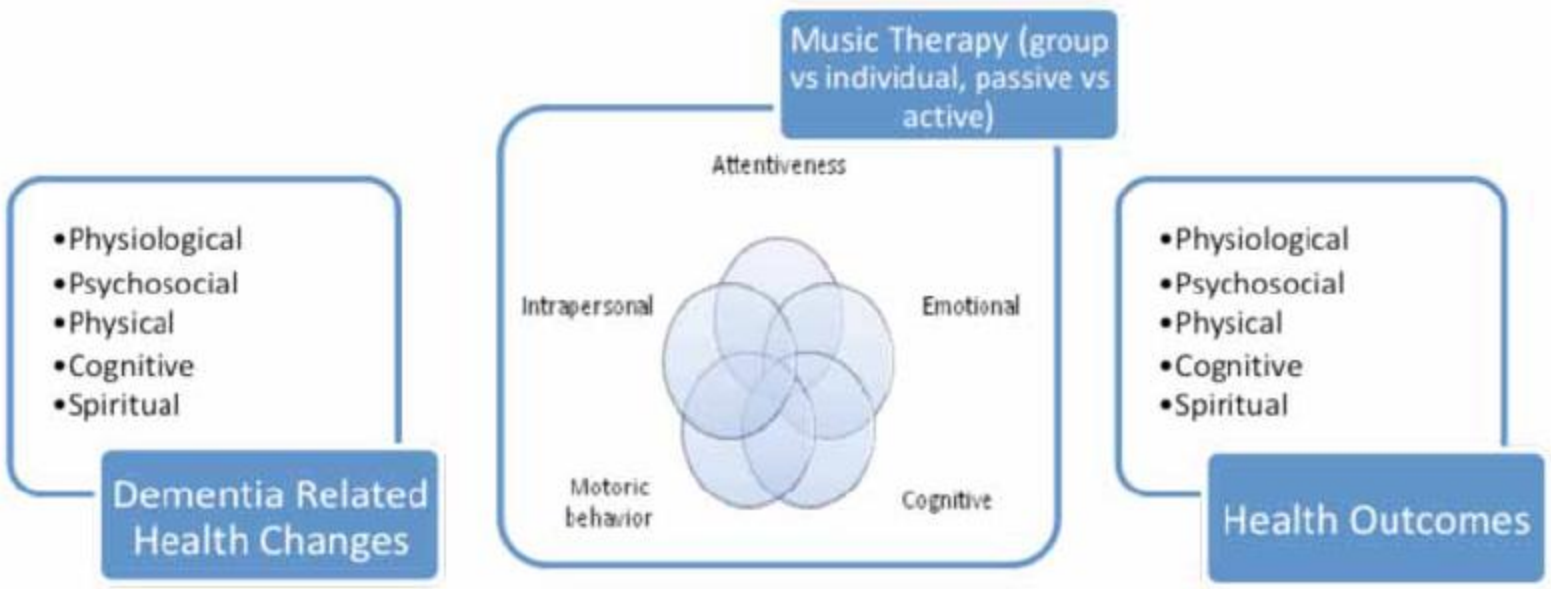
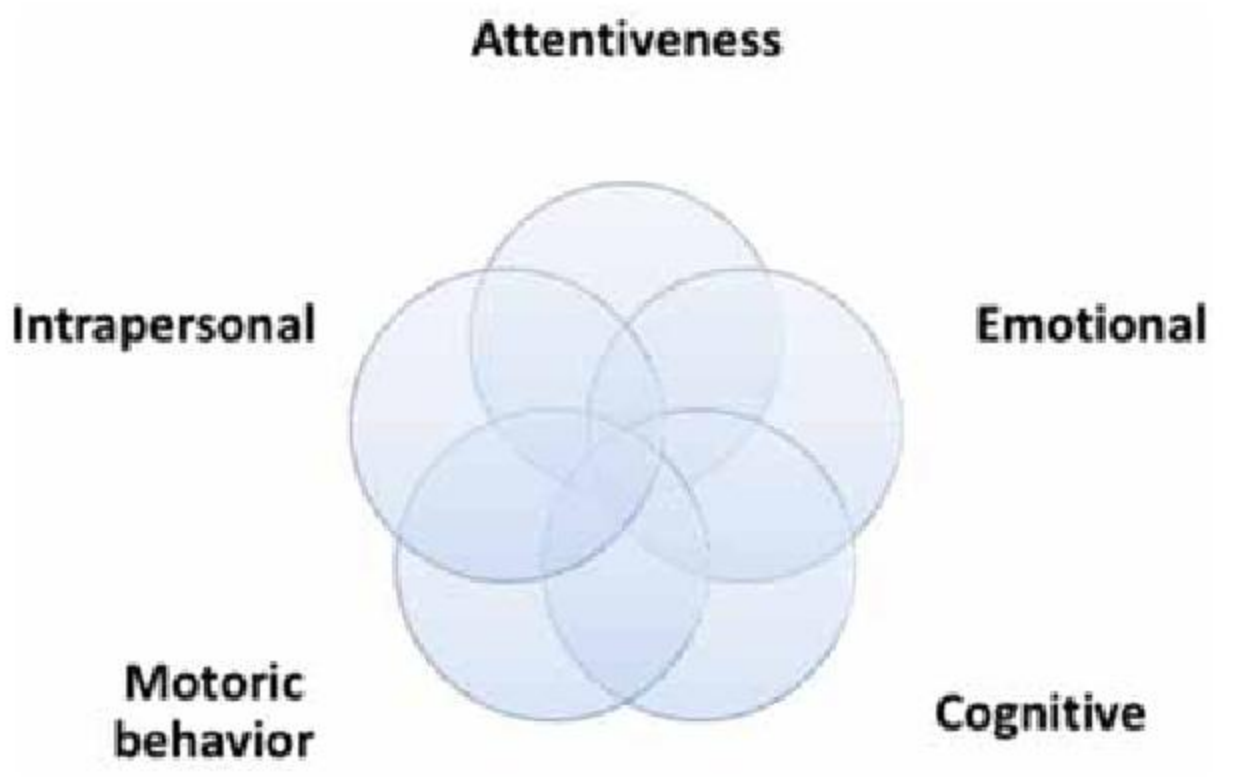


Figure 6 **Music therapy intervention in greater detail**



Doctoral Student Highlights

This section is intended to highlight doctoral student's achievements. If you would like to be highlighted in this section please email us at JNDSS@nursing.upenn.edu . You must be a doctoral student from any school in the US or countries.

Doctoral Students Awarded NINR Grant

Doctoral student and Hillman Scholar **Kaitlin Best** for her recent F31 award of $ 42,676 from the National Institute of Nursing Research for her study *"Defining risk for iatrogenic withdrawal syndrome in critically ill children"* Kaitlin's sponsor for this study is **Dr. Martha A. Q. Curley, PhD, RN, FAAN.** The proposed study will contextualize the phenomenon of iatrogenic withdrawal syndrome within the unique clinical circumstances in which it occurs. The results of this study will further NINR's mission to better understand symptom management and the causes of disease, including the behavior of systems (e.g. family units, populations, and/or organizations) that promote the development of personalized interventions.

Kaitlin is from Atlanta, Georgia, where she graduated from high school in 2006 and started her undergraduate education at Emory University. She pursued a degree in Chemistry as an INSPIRE scholar, a program which facilitated undergraduate involvement in research. Kaitlin conducted an independent project in a biochemistry lab for two years. During this same period, she completed her certification as an EMT, worked in the emergency department of Emory University Hospital-Midtown, and volunteered for Emory University's student-run EMS unit. After her sophomore year, she found that her true passion was in nursing, and she completed one year of pre-requisites at Emory before transferring to the University of Pennsylvania School of Nursing in 2010. Kaitlin was chosen as a Hillman Scholar following her first year at Penn, and subsequently became involved in the work of her mentor, Dr. Martha Curley. In addition to working with data from Dr. Curley's *RESTORE* clinical trial, Kaitlin has also written a systematic review on risk factors for iatrogenic withdrawal in critically ill children, which was recently accepted for publication in *Pediatric Critical Care Medicine.* She graduated summa cum laude with her BSN in May 2013.

Doctoral student **Susan Malone** received a F31 award of $85,352 from the National Institute of Nursing Research for her study "Does Chronotype Modify the Relationship between Sleep Duration and Body Mass Index in Adolescents." Susan's sponsors for this study are Terri Lipman, PhD, CRNP, FAAN of Penn Nursing, and Babette Zemel, PhD and Allan Pack, MBChB, PhD of the Perelman School of Medicine.

A doctoral student at the Penn Nursing since 2010, Ms. Malone received a BSN from Georgetown University in 1984 and a MSN in adult health chronic care from the University of Pennsylvania in 1986. She subsequently enjoyed a long career in diabetes education and school nursing. She has extensive experience as a clinical nurse, as a Certified Diabetes Educator, and as a Certified School Nurse/Health Educator. She has won numerous awards and grants, including the 2014 Heilbrunn Nurse Scholar Award, and her work has appeared in a number of peer reviewed publications. To learn more about Ms. Malone study and accomplishments click on the following link
http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=85

Justine Sefcik Elected Chair of Graduate and Professional Student Assembly

Justine Sefcik, a rising fifth-year doctoral student in the School of Nursing, was recently elected chair of the University of Pennsylvania's Graduate and Professional Student Assembly (GAPSA). Sefcik will serve alongside 11 other officers on the executive board of GAPSA, the official student government body for Penn's 12 graduate schools. Sefcik, who has worked as a nurse for 17 years and served as vice chair for research students this year, is pursuing a PhD so she can focus more on research.
Ms. Sefcik is a 2012-2014 National Hartford Centers of Gerontological Nursing Excellence Patricia G. Archbold Scholar and a previous Jonas Hartford Scholar. Prior to entering the doctoral program Justine was working as a Registered Nurse in an administrative role as Assistant Director of Nursing/Education Coordinator in a long term care facility. At Penn she has had multiple opportunities to collaborate with both quantitative and qualitative researchers in different fields on research studies and publications all focused on improving the quality of life for older adults. For her dissertation work, she has planned a mixed-method study design and is working with an interdisciplinary dissertation committee. To learn more about Ms. Sefcik accomplishments click the following link
http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=89

Darina Petrovsky Investigates How Singing Impacts Language and Memory

The National Hartford Centers of Gerontological Nursing Excellence (NHCGNE) has selected **Darina Petrovsky** for its prestigious *2014 Patricia G. Archbold Predoctoral Scholar Award*. Darina, a University of Pennsylvania School of Nursing predoctoral student with Penn Nursing's Center for Integrative Science in Aging, investigates the impact of singing on language and memory in older adults, and correlates the variance in each behavioral response with the variance in neurophysiologic response to Transcranial Magnetic Stimulation (TMS) — increasingly recognized as a potential biomarker of clinically-relevant neuroplasticity in aging. The NHCGNE award program seeks to advance the professional development of scholars from underrepresented minority groups and support their growth as the next generation of academic leaders with the goal of improving the nation's ability to provide culturally inclusive care to its increasingly diverse aging population.

Darina conducts her dissertation work at the *Perelman School of Medicine Laboratory for Cognitive and Neural Stimulation* where she explores the use of music to promote neuroplasticity in cognitively impaired older adults. Darina's distinguished faculty mentorship team includes *Pamela Cacchione PhD, CRNP, BC, FAAN,* the Ralston House Endowed Term Chair in Gerontological Nursing and Associate Professor of Geropsychiatric Nursing at the School of Nursing and *Roy Hamilton MD, MS,* an Assistant Professor of Neurology at the Perelman School of Medicine and Director of the Laboratory for Cognitive and Neural Stimulation. More about Darina and her work click the following link
http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=90

Paule Joseph Explores Health Disparities and Taste Genetics

Penn Nursing doctoral scholar **Paule V. Joseph, MSN, CRNP, CRRN, CTN-B,** investigates the role of health disparities and taste genetics on childhood obesity. Born in Guatire, Venezuela, Joseph aspires to become an educator and nurse scientist focused on improving the health of minority and underserved populations. Her dissertation research will employ genetic research to explain how a genetic predisposition towards sweet taste might affect a child's physiological expression of obesity. She is a member of *Penn Nursing's Biobehavioral Research Center* and the Center for Global Women's Health, and also conducts interdisciplinary research at the *Monell Chemical Senses Center,* world renowned leaders in chemosensory biology. In addition, Joseph serves as editor-in-chief of *Penn Nursing's Journal of Nursing Doctoral Students Scholarship*. To learn more click http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=92

Youjeong Kang Presents Study at International Nursing Research Congress

Penn Nursing lecturer and recent doctoral student graduate **Youjeong Kang, PhD, MPH, RN,** has been selected to deliver a presentation, "Difference in Scores on the Midlife Women's Symptom Index Between Women with and without Cardiovascular Disease," with Penn Nursing professor *Eun-Ok Im, PhD, MPH, RN, CNS, FAAN,* as well as a poster presentation, "Asian-American Midlife Women's Physical Activity and Their Relationships to Sleep-Related Symptoms," at the STTI's 25th *International Nursing Research Congress* held July 24-28, 2014 in Hong Kong.

Kang's dissertation study, *"Predictors of Re-hospitalization in Older Adults with Heart Failure Receiving Telehomecare,"* was funded by the National Institute of Nursing Research (NINR) and she received additional support from two STTI awards: a $5,000 grant to help with the dissertation study and the *Edith Anderson Leadership Education Grant* to assist with presenting study data in Hong Kong. Kang, who was born in South Korea, recently defended her doctoral dissertation and earned a minor in Health Informatics with guidance from Penn Nursing professor *Kathryn Bowles, PhD, RN, FAAN,* a leading expert in the field of discharge planning and transitional care.

Kang describes Dr. Kathy Bowles as her 'fabulous mentor.' With deep gratitude she says, "Dr. Kathy Bowles has been very patient with me since the beginning of my PhD program, and she never gave up on my potential for becoming a nursing researcher and

scholar. She has provided me with many opportunities to develop my leadership skills, and her continuous efforts to help me complete my dissertation have been invaluable. Under her mentorship, I was also able to develop my statistical skills and have seven publications as a statistician."

Kang's study dissects characteristics of older adults with heart failure who received telehomecare and identifies subgroups who are at risk of rehospitalization or who benefit the most from telehomecare. In the U.S., heart failure is responsible for more rehospitalizations than any other diagnosis and frequent re-hospitalizations among heart failure patients present a significant financial burden on patients, families, and the public health system. Consistent with the NINR's priorities, Kang's study results will assist in the creation of guidelines to optimize the use of telehomecare with the goal of improving the use of technology in healthcare.
http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=93

Predoctoral Student Awarded Advocacy and Public Policy Scholarship

Danielle Altares Sarik, BSN, MSN, is one of six recipients of the 2014 *Academy Health Presidential Scholarship for the Academy Health Institute on Advocacy and Public Policy.* Danielle, who began her education at Penn Nursing as an accelerated student, is now a pre-doctoral fellow with Penn Nursing's Center for Health Outcomes and Policy Research (CHOPR). Her program of research focuses on international nursing and global health, nurse education and patient outcomes, as well as the role of advanced practice nurses in health care delivery. Danielle was selected for her leadership ability, potential to contribute to the field, and keen interest in translating health services research (HSR) into policy. Learn more about Ms. Altares Sarik
http://www.nursing.upenn.edu/admissions/Pages/Meet-Our-Students.aspx?itemID=74

Call for Manuscript and Art Submissions!

All current doctoral students are invited to submit a manuscript for review and consideration for the inaugural publication of the Doctoral Student Organization's Journal. *We are also accepting submissions of art work for consideration, including drawings and photographs.*

The submission deadline is December 15, 2014.

The "Journal of Nursing Doctoral Students Scholarship" does not aim to compete with highly ranked and established journals in the field; rather it provides a venue for doctoral students to express their thoughts and opinions. Some student work, such as concept or theoretical analysis papers, do not fit well with research focused publication sources looking for a data-based research reports. To bridge this gap and share the outstanding ideas with the rest of the scientific community, we invite you to submit research briefs, concept or theoretical analysis, systematic or focused literature reviews and any other publications produced by you during your doctoral studies.

The current mission statement of the journal:
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.

Deadline for submission is December 15th.
Types of acceptable manuscripts for submission:

- Personal Opinion Pieces
- Reflections on Practice, Research or Policy
- Historical Research
- Methodological Articles
- Case Studies
- Commentaries
- Research Briefs
- Concept Analysis
- Theoretical Frameworks
- Systematic or Focused Literature Reviews

Author Guidelines:
We prefer *manuscripts* no longer than 20 pages and no shorter than 3 pages (font: Times New Roman; font Size: 12 points; text Color: black; double spaced; margins -1 inch; text in one column). However, special considerations will be made for submissions that exceed the requested size. We prefer *references* following the APA 6th edition format but we will accept any other citation style. Please place each figure or table in the body of the manuscript and on a separate page at the end of the manuscript. Please send your submissions in a Word format to the Co-Editors: Paule Joseph and Megan Streur to **JNDSS@nursing.upenn.edu**

Manuscripts will be reviewed by at least 2 reviewers. In the event that reviewers have a request for minor revisions, the authors will have 2 weeks to complete the revisions. The target date for the third publication is Spring 2015

We are also accepting submissions of art work for consideration, including drawings and photographs. These artistic expressions related to nursing or healthcare will be incorporated and presented throughout the upcoming first issue of our journal.

Please feel free to contact Paule and Megan with any questions and requests regarding the journal or possible submissions.

Finally, we need your help reviewing the submitted articles. Being a reviewer is a great experience, excellent addition to your CV and a gift you are sharing with your peers. Please send us an email to JNDSS@nursing.upenn.edu to indicate your interest in becoming a reviewer for the JNDSS (we are extremely grateful to our peers that have already signed-up to be reviewers).

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