Abstract

Principle Investigator: Maryann Abendroth, PhD, RN

Research Title: Caregiver Strain Risk as a Predictor of Physical Health among Informal Caregivers of Persons with Parkinson's Disease

Purpose: The purpose is to determine whether a newly modified and validated tool, the Caregiver Strain Risk Screen-14 (CSRS-14) specifically designed for informal caregivers of persons with Parkinson's disease, is predictive of frequency of physical health symptoms in informal unpaid caregivers.

Background and Significance: Parkinson's disease is an incurable degenerative neurological condition and, unlike for some other chronic diseases, the unpredictability of symptom presentation, coupled with an uncertain disease course, can present unique challenges for informal caregivers. The complexity of motor and non-motor symptoms can intensify caregiver strain. Existing instruments to measure strain specific to caregivers of persons with Parkinson's disease have not been based on theory nor were they psychometrically tested using confirmatory factor analysis. Validation through such testing strengthens the value of the CSRS-14 over other tools in evidence-based practice, as does its theory base. It is important to attend to the impact that caring for persons with Parkinson's disease has on informal caregivers, because such caregivers tend to ignore their own ailments due to the focus on caregiving.

Methods: A non-experimental, correlational design using cross-sectional data will be implemented. A survey questionnaire will measure the variables of interest: frequency of physical health symptoms, caregiver strain risk, age of caregiver and care recipient, length of time since diagnosis, mobility level of care recipient, hours/week of paid and unpaid respite care. The CSRS-14 will measure caregiver strain risk, and the Barthel Index will measure the mobility level of the care recipients. The dependent variable, frequency of physical health symptoms will be measured using the Pennebaker Inventory of Limbic Languidness. Online and paper/pencil survey formats will be available. A hierarchical multiple regression analysis will determine whether scores on the CSRS-14 are predictive of frequency of physical health symptoms in caregivers of person with Parkinson's disease while controlling for demographic variables.

Relevance to Nursing: Often caregivers ignore their own physical symptoms because they are focused only on the health needs of the care recipient. The CSRS-14, if predictive of frequency of physical health symptoms, may indicate the need for nurses to investigate further the health and well-being of caregivers of persons with Parkinson's disease. Although currently nurses may informally assess caregivers for strain risk during appointments for persons with Parkinson's disease, the valid and reliable CSRS-14 would provide an efficient tool for formal assessment of risk for strain in this vulnerable population of caregivers. That is, users of the CSRS-14 will be relying on an efficient instrument grounded in theory and research. The value of interweaving theory, research, and practice is that it enhances evidence-based care, leading to measurable outcomes that are critical to advances in nursing science.

Abstract

Principle Investigator: Yenupini J. Adams, BSN, RN

Research Title: Delays in the Provision and Utilization of Postpartum Care in Rural Central Malawi

Purpose: This study aims to describe 1) factors that affect women and their husband's decision to seek postpartum care in a sample of rural farmers (husband and wife dyads) who have had at least one live birth in the past one year and are living in Central Malawi; 2) factors that prevent women from reaching a health facility for postpartum care; and 3) challenges that rural health facilities face in providing postpartum care in Central Malawi.

Background/Significance: Maternal mortality remains a major global health concern, especially in Sub-Saharan Africa. Malawi's estimated maternal mortality ratio (MMR) of 675 maternal deaths per 100,000 live births is more than 40 times the MMR of 16 per 100, 000 births in developed countries. The majority of maternal deaths (69.8%) in the Central Region of Malawi occur in the often neglected postpartum period. Actually, 90% of the postpartum maternal deaths occur within the first 7 days postpartum. Despite the high numbers of postpartum mortality, many women do not utilize postpartum care. The 2010 Malawi Demographic and Health Survey (MDHS) indicated that almost half (48%) of women did not receive any postpartum care after giving birth. Our study seeks to identify delays in the provision and utilization of postpartum care in rural Central Malawi using the "three phases of delay" framework. This study is one of the first postpartum studies to interview husband and wife dyads, thus exploring the roles and influences of husbands in postpartum care use.

Methods: A cross-sectional descriptive survey design will be used. Participants include a convenience sample of 120 rural farmers (60 husband and wife dyads) who have had at least one live birth in the past one year and live in Central Malawi. In addition, administrators and midwives from four rural health centers will be interviewed. Data will be collected using interviews with the rural farmers, administrators and midwives. Three questionnaires from the World Health Organization's Safe Motherhood Needs Assessment will be used including postpartum, nurse midwife and facility management interviews. The husband and wife dyads will be interviewed separately using male and female versions of the postpartum interview. A translator, fluent in both Chichewa and English, and the PI will obtain consent and conduct the interviews. Data will be analyzed using STATA 14 statistical software.

Nursing Relevance: Postpartum care is critical for reducing maternal morbidity and mortality and improving the health of mothers. It is critical that women access postpartum care in Malawi because it enables skilled birth attendants to prevent potential postpartum problems or identify and treat postpartum complications promptly. Findings will be used to develop tailored interventions to reduce delays in seeking and receiving postpartum care in rural communities of central

Abstract

Principle Investigator: Linda H. Aiken, PhD, RN, FAAN

Research Title: Predicting Likely Candidates for Successful Magnet Applications Among Hospitals in Europe

Purpose: To distinguish hospitals in Europe that are Magnet-like and near-Magnets in order to inform strategies for improving Magnet Journey success in Europe.

Background/Significance: The absence of Magnet hospitals in Europe casts doubt about the global applicability of Magnet recognition that has been transformational in improving nursing and patient care where it has taken root. Researchers at the University of Pennsylvania have produced much of the outcomes research on Magnet hospitals since their inception in the 1980s to the present day including an evaluation of the first Magnet hospital outside the U.S. in England which failed to be sustained in the context of the National Health Service. This proposal builds upon that evidence base to inform future efforts to successfully extend Magnet (and Pathways) initiatives in Europe and ultimately to more countries globally.

Methods: We exploit unique nurse and patient outcomes data on more than 1000 hospitals in the U.S. and 12 European countries collected by the research team at great costs to multiple sponsors including the NIH and the European Union. In the U.S. data are available on a panel of 800 hospitals at two points in time including over 70 Magnet hospitals. In Europe, nurse and patient data are available for a representative sample 488 hospitals in Belgium, England, Finland, Germany, Greece, Ireland, Netherlands, Norway, Poland, Spain, Sweden, and Switzerland.

Analysis: Using data from U.S. hospitals, predictive models indicating which nursing and organizational characteristics are most salient in distinguishing Magnet and non-Magnet hospitals will be regressed logistically on organizational and nursing characteristics. The resultant discriminant function from the different models will be used to obtain for each hospital a predicted logit (or the log-odds on being a Magnet hospital). Using these findings, we will estimate propensity scores for each of the European hospitals and classify them into the three groups; i.e., "Magnet-like," "near-Magnet," and "not like Magnet" hospitals. Logistic regression models and ordinary least-squares regression models will then be used to determine to what extent these groups differ with respect to nurse (satisfaction, burnout, intent to stay) and patient outcomes (mortality, patient satisfaction, patient safety).

Implications: Countries with substantial numbers of Magnet-like and near Magnet hospitals will be identified and could inform national government support for Magnet applications and targeted technical assistance efforts to enhance success. Requirements thought to be important in Magnet designation that may be immutable in certain countries can be evaluated in terms of their impact on the essentials of Magnet including excellent nurse and patient outcomes to inform evolving Magnet requirements. The net result of the study could be more successful Magnet applications in Europe which would benefit nurses and patients.

Abstract

Principle Investigator: Jeanne L. Alhusen, PhD, CRNP

Research Title: Tailored Self-Management Intervention Promoting Resilience in Perinatal Depression

Purpose: The purpose of this study is to generate foundational knowledge regarding the patterns of perinatal depression, and to examine the potential impacts of a nurse-led self-management support (SMS) intervention on reducing perinatal depressive symptomatology and improving mother-child interaction in a racially diverse sample of mother-child dyads living in urban poverty.

Significance: Nearly one-third of all women will suffer from depression during their lifetime. Depression is particularly prevalent among single mothers living in low-income urban communities with up to 59% reporting high rates of depressive symptomatology during pregnancy and 52% manifesting chronic depressive symptoms 1-2 years after the birth of the child. Antenatal and PPD are associated with a multitude of adverse pregnancy and early childhood outcomes including delivery of preterm and low birthweight infants and adverse cognitive, socio-emotional, and health outcomes in children of depressed mothers. SMS approaches for multiple chronic diseases have been shown to be effective, however, such approaches have only recently been tested among patients suffering from depression. Although SMS approaches for depression studied to date reduced depressive symptomatology, improved functioning, and increased self-efficacy in middle-income White samples; we have little understanding of the role of SMS in mothers with perinatal depression living with the persistent stress of urban poverty.

Methods: The proposed randomized control trial is a longitudinal study of the relations between depressive symptomatology, and maternal-child interaction in pregnant women, and in the post-partum period. Inclusion criteria for participants (n=60): English-speaking, pregnant women, $\geq$18 years old, mild/moderate depressive symptomatology, seeking prenatal care at Johns Hopkins Hospital. Exclusion criteria: positive response to suicidal ideation indicative of severe depression or on pharmacotherapy for depression. Any woman expressing suicidal ideation will be immediately evaluated by OB/GYN. Consenting women meeting criteria for depressive symptomatology (via the Edinburgh Postnatal Depression Scale: EPDS) will be randomized into intervention vs. standard clinical care. In the 2nd and 3rd trimester, 60 mothers will complete measures of depression (EPDS), social support, stress and self-esteem (all via the Prenatal Psychosocial Profile). The intervention group (n=30) will participate in a tailored SMS intervention, based on the "Mothers and Babies Course" delivered over 6 weeks during the 3rd trimester. Three months after delivery, measures of depression and maternal-child interaction, via the Nursing Child Assessment Satellite Training-Feeding Scale, will be collected.

Nursing Implications: Perinatal depression is a significant public health issue with well-documented negative consequences for mothers, neonates, and young children. Mothers deserve access to empirically-supported skills to promote resilience in the face of adversity. Findings from this study, and the planned subsequent R01 submission, will be instrumental in assuring our most vulnerable families have access to programs to promote their mental health and the well-being of their children.

Abstract

Principle Investigator: Jacalyn S. Buck, PhD, RN, NE-BC

Research Title: Evaluation of Nursing Activities and the Alignment to Top-of-License Practice

Purpose: The overall purpose of this study is to examine top of license practices of BSN and ADN prepared nurses. Our specific aims are to: 1a). examine the alignment of actual nursing practices/activities to recommended The Nurse Executive Center' Advisory Board Organization's top of license practices/activities; 1b). compare bachelor degree (BSN) prepared nurses' top of license practices/activities to associate degree (ADN) prepared nurses' top of license practices/activities; 2a). explore nurses' perceptions of what nursing practices/activities constitutes top of license and what practices/activities could be delegated to other care personnel; 2b). explore whether there are differences in the perceptions of top of license practices/activities between BSN and ADN prepared nurses.

Background/Significance: The call for nurses to work at the "Top of License" has emerged as a path toward leveraging the unique knowledge and capacity of the largest portion of the healthcare workforce nurses. It has been found that nurses spend a considerable amount of non-value added time on activities that could potentially be delegated to other team members who could accomplish the care safely and with greater cost effectiveness. Inefficiencies in organizational systems also add to non-value added time. To date, there has been no empirical work that has aligned nursing practices and workflow and examined these practices relative to the notion of "top of licensure".

Methods: Mixed methods including an observational cross-sectional time motion study and a focus group with Delphi study techniques will be used. For Aim 1, an observational cross-sectional, time-motion study on a medical-surgical unit using an iPad application, TimeCaT will be conducted. A purposive sample of 10 BSN and 10 ADN RNs will be observed for three -12 hour shifts for a total of 720 hours. For Aim 2, a qualitative approach will be used for four focus groups and followed by a Delphi study approach.

Analysis: For Aim 1, observed nursing activities including type, number and duration will be categorized. Descriptive and correlational analysis will be performed to assess nurses' time spent on top of license activities, and its' relationship to nurses' level of education (BSN vs ADN). For Aim 2, a constant comparative method will be used to analyze data from the focus groups. The Delphi method will generate multiple rounds of consensus that can help us understand how nurses' perspectives regarding top of license activities evolved during the process.

Implications: Working within the complex healthcare environment of today, nurses must provide care that is cost-effective, efficient, and produces high quality outcomes. Our findings will provide the pilot data to begin the very critical discussion about innovative new nursing care delivery models that must be developed, and are critical to the survival in the US health care system.

Abstract

Principle Investigator: Linda H. Eaton, PhD, RN, AOCN

Research Title: Hypnosis for Pain Relief with Cancer Survivors

Purpose: The purpose of this pilot study is to evaluate the feasibility, acceptability and preliminary efficacy of hypnosis for managing pain in cancer survivors. The results will provide pilot data to inform a larger randomized controlled trial.

Background/Significance: Pain is a complex and significant problem among cancer survivors. Cancer survivors continue to experience pain that interferes with function long after treatment has ended. Pharmacotherapy is the primary treatment modality, but it has significant adverse effects and does not eliminate pain. Efficacy testing of non-pharmacologic interventions is needed with this population. Hypnosis is a promising non-pharmacologic intervention for improving chronic pain in cancer survivors.

Methods: The study design is a randomized trial with a wait-list control. A convenience sample of 40 cancer survivors with chronic cancer-related pain will be recruited from a NCI-designated comprehensive cancer center. Participants will be randomly assigned to the intervention group or wait-list. Both groups of patients will receive a nurse-delivered tailored hypnosis session for pain reduction which will be digitally recorded, uploaded to a MP3 player, and listened to daily by the immediate intervention participants for the first 4 weeks. During the second 4 weeks of the study, the wait-list participants will use the intervention. Study measures include PROMIS (pain, anxiety, depression, fatigue, sleep, social and physical function), Tellegen Absorption Scale (hypnotizability), Credibility/Expectancy Questionnaire (treatment expectancy), Pain Catastrophizing Scale, and a demographic questionnaire. Data will be collected by phone at baseline, week 4, and week 8. Both the intervention and wait-list participants will receive weekly phone calls with a reminder to complete the daily paper diary (pain, anxiety, other pain relief interventions). Participants will also complete a pre- post-intervention questionnaire to measure pain and anxiety each time hypnosis is used. Structured interviews to evaluate intervention acceptability will be conducted by phone with all participants at week 8. Data analysis will include descriptive and inferential statistics, and general linear modeling. Content analysis will be used to interpret the qualitative data.

Nursing Relevance/Implications: Hypnosis can be very powerful in managing pain and side effects are rare. Combining nurse expertise with technology allows for easy home delivery. With minimal training, nurses can develop an individualized hypnosis recording for pain relief which patients could use at home as a low-cost, self-management intervention. Findings from this study will add to the knowledge base for survivorship care and provide an intervention option for both patients and clinicians in treating chronic cancer-related pain.

Abstract

Principle Investigator: Christine A. Feeley, PhD, RN

Research Title: Examining Sleep Disruption in Caregivers of Young Children with Type 1 Diabetes

Purpose: The purpose of this study is to examine the feasibility of data collection, methods, and recruitment, as well as examine sleep (objective and subjective measures to determine total sleep time, nighttime awakenings, time to fall asleep), stress, and depressive symptoms in the primary caregivers of school age children with Type 1 diabetes (T1D).

Background/Significance: There are nearly 15,000 new cases of T1D diagnosed each year in children in the United States. For many of these children, the parental caregiver will take on the bulk of responsibility for managing their diabetes care. Diabetes care is complex and relentless, and does not stop when the child goes to sleep. Caregivers report elevated feelings of stress and depressive symptoms related to their caregiving responsibilities, as well as poor sleep. Poor sleep has been linked to elevated feelings of depression and stress in previous studies of caregivers of children with chronic conditions. Poor sleep may negatively influence how a caregiver perceives their stress level and increase depressive symptoms, however, sleep has not been well characterized in caregivers of school age children with T1D. Thus, the need for more research to describe sleep in caregivers of school age children with T1D is needed.

Methods (Design, Setting/Sample, Procedures, Instruments, Analysis Plan): The sample includes self-identified primary caregivers (no diagnosed sleep disorder, over 18 years) of children (6-12 years, diagnosed with T1D for at least 2 years, lives with primary caregiver). A goal of 25 participants is proposed. The design is an exploratory, descriptive feasibility study. Caregivers will be approached during out-patient clinic visits for participation. After informed consent is obtained, the caregiver will receive questionnaires (demographics, the Pittsburgh Sleep Quality Index (PSQI), Perceived Stress Scale, and CES-D depressive symptom measure) and an actigraph to be worn for seven days while keeping a sleep diary. The actigraph is a small, watch-like device worn on the non-dominant wrist that provides an objective measure of sleep that is paired with a sleep diary the caregiver will keep each night with an area to note reasons for nighttime awakenings. Instruments will be mailed back to reduce participant burden. An incentive will be mailed to the caregiver upon completion. Data will be kept on caregivers approached, those who agreed, and those who completed the 7 days with the diary. Analysis will include frequencies and correlations.

Nursing relevance/implications: Nurses have a pivotal role in educating, supporting, and empowering patients and caregivers in self-management, especially with diabetes. Helping to support caregivers starts with assessment, and determining the needs of the caregiver and child. Assessing sleep and educating caregivers on the need for adequate rest may be an important part of diabetes education and may help caregivers to deal with stress and depressive symptoms.

Abstract

Principle Investigator: Louise K. Fleming, PhD(c), RN

Research Title: Parental Management of Adrenal Crisis in Children with Congenital Adrenal Hyperplasia

Classic congenital adrenal hyperplasia (CAH), a rare, genetic, endocrine disorder, requires parents to inject a child with hydrocortisone intramuscularly during times of illness and adrenal crisis. It shares characteristics of episodic, life threatening crises with other, more prevalent, chronic childhood conditions such as type I diabetes, asthma, and anaphylactic food allergies. These characteristics can prevent parents from optimally managing the condition, as parents may live in fear of a crisis and question their ability to respond effectively. Prior research suggests that parental fear is related to a lack of detailed, thorough, and repeated education from health care providers on how to best handle these crises; yet, few studies have examined how parents are prepared for crisis management or their management strategies.

The aims of the proposed study are to describe circumstances surrounding adrenal crises in children with CAH by examining parents': 1) perceptions of the adrenal crisis experience; 2) descriptions of resources (e.g. healthcare professionals, Internet, etc.) used to manage times of crisis; and 3) strategies and approaches used to inform others in their social network (e.g. extended family, school personnel) about the nature and management of adrenal crisis events. Additionally, parents' perceptions of the consequences for their child with CAH, themselves, and their family, of living with the possibility that their child will experience a life threatening crisis and the relationship between parents' perceptions of their management ability and the impact CAH has on the family will be explored.

This study builds on the investigator's 2013 pilot study and will be conducted in two phases. Parents of children with CAH will be recruited through the CARES Foundation, which has agreed to assist with this research. In Phase 1, parents will be asked to complete an online questionnaire comprised of established measures of family life in the context of childhood illness. Results from Phase 1 will be used to examine the possible relationship between parents' perceptions of their management ability and the impact CAH has on the family and to select a purposive sample of parents for follow-up interviews. In Phase 2, semi-structured, qualitative interviews will be conducted to elicit more detailed descriptions of parents' experiences in managing CAH-related crises and their perceptions of the consequences of living with their child's life threatening condition.

Nurses are often the healthcare providers that prepare parents on how to manage episodically occurring, life threatening crises associated with pediatric chronic conditions such as CAH. The results of the proposed study will provide an evidence base for the development of programs and materials that promote and support families with children having such conditions.

Abstract

Principle Investigator: Susanne W. Gibbons, PhD, CRNP

Research Title: Family Caregiving Role Adjustment and Dyadic Mutuality

Purpose: The purpose of this research is to gain a conceptual understanding of cancer family caregiver and care recipient mutual negotiation of roles and responsibilities for developing a preliminary dyadic caregiving model.

Background/Significance: Current focus on mutual or dyadic coping with cancer diagnosis and treatment stems from the understanding that caregivers and care recipients work individually but also together to manage their shared stress and to make meaning out of their mutual experience. Because of this, mutuality and interdependence in dyadic coping extends beyond social support in that couples collaborate, negotiate, and problem-solve to jointly manage stress and make decisions related to a diagnosis such as cancer. There has been little systematic inquiry into the dynamics of shared role adjustment in the family caregiving dyad even though the stress of chronic illness appears to affect both the patient and the caregiver's well-being. Research on family caregiver-care receiver role adjustment and dyadic mutuality in cancer diagnosis and treatment has resulted in conflicting evidence and inadequately defined phenomena.

Methods: A descriptive study will be conducted using a grounded theory approach to data collection and analysis. A purposive sample of cancer patient participants and their designated family caregiver will be recruited from the National Institutes of Health Clinical Center. Final sample size will depend on conceptual and theoretical saturation, with an anticipated minimum of 40 participants to include 20 caregiver-care recipient dyads. Each participant encounter will begin with completing the socio-demographic questionnaire. A focused interview guide will be used to achieve the research objectives, but the participant will determine the order of the discussion. During data collection and analysis, data will be compared to previous interviews and to the literature so that gaps in the developing framework can be identified and questions for subsequent interviews adjusted. To capture the experience and perceptions of the interviewee, interviews with caregivers and care recipient participants will be conducted separately and by the same researcher. During analysis, both interviews will be analyzed on the level of the patient, of the family caregiver, and of the interaction between the two.

Nursing Relevance/Implications: A dyadic model for cancer family caregiving is necessary for identifying vulnerabilities and providing early intervention and guidance regarding resources and services needed to maximize dyadic success. Sacrifices caregivers make can lead to burden and stress, or to positive adjustment and growth. Research to date indicates that the path that is taken largely depends on the dyadic relationship. Through a better understanding of caregiving role adjustment and dyadic mutuality, we believe it will be possible to identify novel ways to support caregivers and their care recipients as they cope day to day and look toward the future.

Abstract

Principle Investigator: Bonnie M. Jennings, BSN, MS, PhD

Research Title: Serious Communicable Diseases Unit Care Team and the Ebola Virus Disease Challenge

Purpose: To achieve an understanding of the Ebola virus disease (EVD) challenges as experienced by members of a serious communicable diseases (SCDU) unit care team.

Background/Significance: Fear surrounds EVD because it is highly infectious, and yet the SCDU care team at Emory University Hospital (EUH) chose not to fear the disease but to respect it, knowing their lives were "on the line." We are compelled to study the experience of the SCDU care team in a scientific way.

Design: We will use a qualitative descriptive design to learn about the experience of caring for patients with EVD from the perspective of the care team members.
Setting/sample: The setting is EUH. The EVD SCDU comprises a core team of 21 nurses, 5 physicians, and about 100 support personnel (e.g., biosafety, chaplains). We will use purposeful sampling to conduct interviews with about 30 individuals who were involved in caring for EVD patients. The majority of the sample will be nurses (about 16) who provided 24-hour bedside care. Nurses will be sampled based on their experience (a) as a nurse and (b) as a member of the SCDU team. We seek to sample 2-3 physicians who regularly interacted with the team, and at least one individual from each of the "support" categories. Our goal is to have an appropriate and adequate number of informants to yield information-rich cases.

Procedures: Participants will be recruited from EUH after acquiring Institutional Review Board approval. Written consent will be obtained for those who volunteer to participate. We will also seek permission from the EVD patients because the participants will be asked to discuss their experience of caring for these patients. Due to the potential sensitivity of the interview data, we will initiate a Data Safety Monitoring Plan. Interviews will be the primary mode of data generation, with additional data collected based on information from the interviews. (e.g., protocols). Interviews will be scheduled in a neutral place away from the hospital; privacy will be ensured. Interviews will follow a semi-structured format to support exploring key topics while allowing flexibility to pursue ideas introduced by the participants. All audio-recordings will be de-identified; pseudonyms will be used for participants.

Analysis Plan: We will use conventional content analysis to make analytic comparisons within and across the individual accounts. We will use techniques to "disguise" sources of information to preserve anonymity. The goal of the analysis is to achieve a detailed and interpretive product.

Nursing Implications: Findings from this study have the potential to inform future practice related to providing care for people with seriously communicable diseases. The findings will showcase the nurses who provided direct patient care, while elucidating key information about inter-professional team performance.

Abstract

Principle Investigator: Patricia A. Kinser, PhD, WHNP-BC, RN, FNAP

Research Title: Epigenetic, social, and environmental mechanisms underlying postpartum depression

Purpose: The aims of the proposed study are to explore epigenetic (DNA methylation [DNAm]) patterns involved in postpartum depressive symptomatology, and explore the relationship of DNAm patterns with maternal social/environmental (S/E) characteristics (e.g., depressive symptoms, stress, social support, maternal-child attachment, and parenting self-efficacy). Support from the American Nurses Foundation (ANF) will provide our interdisciplinary team with the unique and important capacity to replicate and extend recent epigenetic studies regarding prenatal prediction of postpartum depression (PPD) with epigenetic biomarkers and expand the state of the science by evaluating the relationship of S/E factors with DNAm patterns and PPD.

Background/Significance: PPD is a public health concern because of its high prevalence and the associated poor health implications for affected women, children and families. Recent data suggest that alterations in DNAm patterns may be a plausible mechanism by which depressive disease risk is modified by S/E factors. Given that DNAm has been shown to be reversible by behavioral interventions, the close evaluation of the relationship of DNAm alterations and S/E factors to the development and persistence of depressive symptoms could provide foundational knowledge for the future development of predictive markers and treatments to address symptoms. Therefore, our multidisciplinary team, with expertise in biobehavioral nursing research, epigenetic methodologies, psychology, and biostatistics, will examine these mechanisms.

Methods: The proposed study will capitalize on the infrastructure of an existing study ("parent study") which is longitudinally tracking 125 Black and White women throughout pregnancy to postpartum and has already collected/stored prenatal and postpartum blood samples and S/E measures. The support of the ANF grant will allow us to conduct whole-genome DNAm assays on the postpartum blood samples of women with the highest and lowest levels of depressive symptoms (N=88). These new data will be combined with existing data on the same women collected during the prenatal period. The combined sample will provide a unique opportunity to study how maternal DNAm patterns during and after pregnancy can mediate the effects of S/E factors on PPD.

Nursing Relevance/Implications: The ANF funding is critical to advance nursing science in the area of epigenetic and S/E mechanisms of PPD. Excitement regarding the recognition that S/E and epigenetic mechanisms may be associated with PPD stems from the potential to not only better understand the biological impact of S/E experiences, but also to apply this knowledge to develop prediction and monitoring assays for PPD and interventions to prevent or reduce the impact of PPD on maternal-child health outcomes. The ability to predict the development PPD using epigenetic biomarkers may provide important opportunities to develop tailored disease prevention activities to those at most risk of PPD and who would benefit most from enhanced maternal resilience related to and reduce the burden of PPD.

Abstract

Principle Investigator: Dan Li, PhD, RN

Research Title: Automated Pressure Ulcer Information Retrieval through Image Processing Technologies

Purpose: The proposed project will develop and test an image processing module to retrieve pressure ulcer (PU) information from pictures taken by Wound, Ostomy, and Continence (WOC) nurses. This image processing module will serve as a core part of an *automated pressure ulcer assessment and documentation tool* (AutoDoc PU) for assessing and recording PU characteristics, with minimal healthcare provider input.

Significance: The proposed AutoDoc PU will be the first program to apply image processing technology to help nurses document characteristics and/or stage of PU. With minimal subjective input, AutoDoc PU will provide objective and consistent information on PU size, surface tissues, and stage. These parameters have been poorly recorded in EHR due to limitations of measurement methodology and subjective nursing judgment. AutoDoc PU has potential to reduce of a nurse's daily workload related to PU assessment and documentation while increasing documentation accuracy toward rigorous treatment strategy. Eventually, nurses will only need to upload PU photos to EHR, and all the image processing, data analysis and major documentation will done automatically by computers or central severs. Furthermore, applying this tool in clinical setting may provide new ways to study PUs with complete, comprehensive, and objective data, which could help design better PU prevention strategies**.**

Methods: The proposed module will utilize the newest image processing technologies to extract several important PU parameters from PU photos taken by WOC nurses. A modified image processing algorithm, originally designed to determine diabetes ulcers characteristics, will be used to identify the PU boundary automatically. PU dimensions (i.e., area, width, and length) will be calculated by counting image pixels inside the boundary. Color and texture features on the PU surface will be extracted from 45 color channels from original PU photos. A Support Vector Machine (SVM) model will be used for segmentation classification to differentiate between different tissues on the PU surface. By classifying the PU surface tissue, an automated PU grading protocol will be followed to determine the stages of a given PU. By discerning PU surface characteristics, the image processing module will classify the PU stage according to the National Pressure Ulcer Advisory Panel (NPUAP) PU grading system. These image processing methods will be tested, validated, and revised utilizing processing a large quantity of pictures taken by WOC nurses during their daily works.

Nursing Implications: The proposed AutoDoc PU will be the first to apply image-processing technology to facilitate the documentation of PU by nurses. AutoDoc PU provides objective and consistent information concerning PU size, surface tissue, and stages. These parameters have been poorly recorded in EHR because of not only limitations in the methods of measurement used, but also the subjective judgment of nurses. AutoDoc PU can reduce nurses' daily workload.

Abstract

Principle Investigator: Rita McGuire, PhD, RN, PHCNS-BC

Research Title: Balance Activities and Strengthening to Improve Condition [BASIC]: Training For Elders with Heart Failure

Purpose: The purpose of this pilot study is to evaluate the effect of a multi-component balance and resistance training [RT] intervention on physical function, balance, and falls in older [≥ 65 y/o] community dwelling heart failure [HF] patients. The study aims: 1] Pilot test multi-component balance activities and RT intervention on primary outcomes. 2] Explore perceptions related to outcomes and the intervention through focus groups. 3] Generate pilot data on adherence. 4] Generate pilot data on feasibility of conducting the BASIC Training intervention.

Background/Significance: Falls are the leading cause of injury-related deaths in this age group. Fall risks are even greater for those with HF due to decreased exercise capacity, loss of skeletal muscle and medication side effects. Though RT is effective for improving skeletal muscle, it has only a modest effect on improving balance, which is comprised of peripheral sensory input central integration, and motor output. It will require a multi-component intervention focusing on balance retraining and strengthening the muscles supporting static/dynamic balance and functional mobility.

Methods: *Design* - Randomized, two-group with wait list control, repeated measures experimental design. *Sample/ Setting* - 40-50 participants recruited from a medical center heart failure clinic; supervised group sessions conducted in the center's health and wellness center. *Procedures* - Participants will be randomized to the intervention group or the wait list control group. Focus groups pre/post intervention. The intervention will be administered in 1x per week supervised group sessions and 2x a week home sessions. *Instruments* - 30 Second Sit-to-Stand, Modified Clinical Test of Sensory Interaction on Balance, Activity Specific Balance Confidence Scale, Timed Up and Go, Dynamic Gait Index.

Analysis Plan: Aim 1- independent t-test to compare change scores from baseline to the end of the first 12 week period for the intervention group with the wait list control group. A second analysis will combine data from the delayed intervention period for the wait list control group with that from the first 12 week period for the intervention group to test change. Supplemental analysis, involving only data from intervention group, will test whether change is sustained at 24 weeks. Aim 2 - thematic analysis conducted with focus group data. Aim 3 - adherence assessed by group session attendance and home activities completed. Aim 4 – assess and report logistics of conducting the study.

Nursing Relevance/Implications: This pilot study will initiate the process of developing a targeted intervention to induce changes in elderly HF patients to prevent future falls; thus reducing costs, physical and emotional burdens related to falls; and effect a major difference in the quality of life for this population.

Abstract

Principle Investigator: Margo B. Minissian, PhD(c),MSN, ACNP

Research Title: "Is Spontaneous Preterm Delivery Associated with Clustering of Maternal Cardiovascular Risk Markers and Impaired Vascular Function? The SPACE study"

Purpose: The broad, long term objective of this American Nurses Foundation award is to prepare the applicant for a career as an independent nurse scientist focusing on the study of cardiovascular disease and women's health. The objective of the planned research study is to identify biological markers of future cardiovascular risk.

Background/Significance: Traditional modifiable risk factors such as cholesterol and hypertension play an important role in risk reduction for cardiovascular disease (CVD) (1, 2). Traditional risk scores are insufficient in properly identifying young women at increased risk of CVD (3). Heart disease is rising in relatively young women despite traditional risk scores; therefore, improved risk detection is warranted in this population (4). Spontaneous preterm delivery (sPTD) is associated with future risk of CVD and with cardiac-related hospitalizations (5) and inflammation (6). The association of sPTD with subsequent future maternal CVD suggests that an otherwise healthy woman is failing her first physiological "stress test." Adverse pregnancy outcomes can be used to identify women at risk for CVD early in their lifespan, prompt initiation of CVD prevention strategies, and potentially limit future disease (10, 11).

Methods: Using a longitudinal, comparative design, the applicant will compare two groups, women who experience spontaneous preterm delivery (sPTD) ($\leq$ 34 weeks) and women who experience term deliveries ($\geq$39 weeks) at two time points (24-72 hours and 6 months postpartum). The following key variables related to future risk of cardiovascular disease will be evaluated: vascular function (augmentation index and augmented pressure measured by pulse wave analysis, pulse wave velocity). Secondary measures to establish effect sizes for future study include: inflammatory markers (C-reactive protein and interleukin-6) and endothelial function (reactive hyperemia index measured by peripheral arterial tonometry) will be collected to calculate effect sizes in this particular cohort. Data will be analyzed using SPSS release 21 for Windows (Chicago, IL). For all analysis, significance will be set at $<$ .05. To examine the equality of the two groups, unmatched baseline sociodemographic (educational level and marital status) and unmatched clinical variables and cardiovascular risk markers (pre-pregnancy BMI, family history of CVD, route of delivery, use of fertility treatments) will be compared using chi-square or t-tests depending on the level of measurement.

Nursing Relevance/ Implications: This will be one of the first studies to examine whether clustering of physiological dysfunction (vascular, inflammation and endothelial dysfunction), all known to influence CVD progression, are present after sPTD and before any clinical CVD is evident. The implications of this research will inform relationships between sPTD and future maternal CVD risk. This effort will shape future studies aimed at developing early screening and treatment for CVD in women.

Abstract

Principle Investigator: Jamie S. Myers, PhD, RN, AOCNS

Research Title: Genetic and Behavioral Factors Associated with Perceived Cognitive Function for Breast Cancer Survivors

Purpose: Explore the relationship between genetic variability for inflammation (polymorphisms/SNPs), behavioral variables (body mass index-BMI, exercise patterns), and perceived cognitive function (PCF) for breast cancer survivors. **Primary-Aim:** Explore the relationship between genetic variability for select SNPs for Interleukin 1 Receptor 1 (IL1R1), Interleukin 6 (IL6), and Tumor Necrosis Factor (TNF) and PCF, controlling for **age/education level/fatigue/distress**. **Secondary-Aim:** Explore whether BMI and exercise patterns moderate the relationship between select SNPs for IL1R1, IL6, TNF, and PCF.

Background/Significance: One in three women in the United States will be diagnosed with breast cancer. The incidence of cancer/cancer treatment-related cognitive changes is highly prevalent and can persist 20 years after chemotherapy for breast cancer. Decreased cognitive function has significant impact on breast cancer survivors' quality of life, including impaired work performance and social relationships. **PCF** is an individual's self-reported perception of cognitive ability. Common biological pathways are postulated for aging, and cancer/cancer treatment-related cognitive decline, including inflammation and genetic factors. Inflammation is associated with elevated **BMI** and chronic inflammation has a negative effect on neural systems involved in cognition/memory. **Exercise** decreases inflammation and improves cognitive performance in older adults. Our preliminary work demonstrated that exercise moderates the relationship between BMI and PCF. No studies have examined genetic variability for inflammation, BMI, exercise patterns, and PCF in women with breast cancer.

Methods: Design-This proposed **exploratory, cross-sectional** study capitalizes on existing data from women participating in a parent study at the University of Kansas. **Setting/Sample**- 110 participants consented to a genetic substudy and provided saliva samples. **Instruments**- Existing data are available from the demographic questionnaire (**age, education level, BMI**) and two self-report instruments: 1) Functional Assessment of Cancer Therapy-Cognition (**PCF**); 2) MD Anderson Symptom Inventory (**fatigue and distress**). **Procedures**- Salivary analysis for genetic variants associated with inflammation (**SNPs for IL6, IL1R1, and TNF**) will be conducted using the Sequenom iPLEX MassArray platform at the University of Pittsburgh. **Analysis plan-**General linear modeling (GLM) will be used to explore relationships between allele presence (allele 1 or 2) and/or genotype (homozygous allele 1, 2, or heterozygous) for each SNP, and the continuous variable, PCF. Hierarchical modeling will control for age/education level/fatigue/distress, entered in the first block. Further model expansion will evaluate moderation effects of BMI and exercise patterns with the presence of allele and/or genotype.

Nursing Relevance/Implications: Findings from this innovative preliminary study will inform our long-term goal to investigate the influence of inflammatory pathways on cognitive function and to develop and test exercise interventions to improve cognitive function in women with breast cancer. The study outcomes are critical to nurses providing survivorship care.

Abstract

Principle Investigator: Britt F. Pados, PhD, RN, NNP-BC

Research Title: Development and Content Validation of the Neonatal Eating Assessment Tool (Neo-EAT)

Purpose: To develop and validate the Neonatal Eating Assessment Tool (Neo-EAT), a parent-report questionnaire for the assessment of feeding difficulty in infants less than six months old.

Background/Significance: Feeding difficulty is common in young infants and includes behaviors such as feeding refusal, irritability, lengthy feeding, coughing, and gagging. The number of infants with feeding difficulty has risen with the increasing survival of critically ill newborns, such as those born premature and with congenital heart disease. Feeding difficulties are problematic because it often results in suboptimal nutrition during a critical time for brain development and also impacts the developing parent-child relationship and the child's long-term behavioral responses to food. Early identification of infants with feeding difficulty is critical for implementation of treatment to optimize nutrition and feeding skill development, but differentiation between typical and atypical feeding behaviors is challenging. No valid and reliable parent-report assessment tools are available for use with breast- and bottle-feeding infants from birth to 6 months of age.

Method: A series of three studies are proposed to develop and validate the Neo-EAT. In Phase 1, items will be generated from three sources: 1) review of the literature for attributes of feeding difficulty in infants less than six months old, 2) review of items on 21 related tools, and 3) parents' description of problematic infant feeding behaviors. Parents' descriptions will be explored through a secondary analysis of interviews with 12 parents of young children with a diagnosed feeding problem and also through an online survey of 30 parents of infants less than six months old. A qualitative content analysis will be conducted using Atlas.ti from both data sources to identify problematic feeding behaviors. In Phase 2, 10 pediatric feeding professionals will be asked to evaluate the clarity and relevance of each of the items generated from Phase 1 on a 4-point ordinal scale. Content validity indices (CVI) will be calculated for each item for relevance and clarity, and for the scale as a whole. Items with a CVI < .78 will be assessed for elimination or revision. Finally, in Phase 3, 25 parents of young infants will provide feedback on the tool through cognitive interviewing. Interviews will be audio-recorded and transcribed. Systematic item-by-item analysis of the cognitive interview data will be used to make final revisions to the tool. Readability testing will be performed after each phase to ensure a reading level of less than fifth grade.

Nursing Relevance/Implications: Nurses are often the front-line providers triaging calls from concerned parents about their child's feeding. The Neo-EAT will be a tool that nurses and nurse practitioners can provide to parents to guide conversations about feeding concerns and to help providers identify infants in need of referral.

Abstract

Principle Investigator: Jana L. Pressler, PhD

Research Title: Cardiopulmonary Resuscitation Instructions - First Responding with Crash Carts

Three successive studies that build on each other, will be used to achieve this. Purpose. The purpose of this research is to clarify what caregivers currently know about crash carts and resuscitations, to determine what instructions are needed to effectively use a crash cart during resuscitations, to develop instructional content to be delivered on a dashboard during resuscitations, and to determine effectiveness of the dashboard instructions in simulated resuscitations.

Background/Significance: Even with CPR training and available emergency crash cart resources, resuscitation efforts tend to be successful only 15 percent of the time. Even though crash carts might be composed of everything essential for resuscitations, they presently are not supplied with user-friendly sets of instructions for how to proceed and use resources.

Methods/Design: Study 1 will employ a descriptive-comparative design. Study 2 and Study 3 will use qualitative designs.

Setting/Sample: Each study will use convenience sampling of RNs who work in a large tertiary urban medical center. Study 1 will query 100 RNs. Study 2 will include 12 RNs who are ACLS certified and will comprise two focus groups of six participants each. Study 3 will include 60 RNs who are not yet ACLS certified. Procedures. Study 1 will use an anonymous online survey to gather data about nurses' knowledge about crash carts and resuscitations. Study 2 will convene two one-hour focus groups. Detailed data will be gathered on appropriate steps/interventions for two specific types of resuscitations (respiratory arrest and cardiac arrest). Findings from Study 1 and 2 will be used to develop the content for the dashboard. Study 3 will pilot test the dashboard in a simulation setting. Two RNs will run one mock code each (15 respiratory and 15 cardiac mock codes total). Dashboard responses to each instruction will be automatically recorded.

Instruments: Study 1 will use a 43-item investigator-created survey. Focus Group responses will be collected and transcribed in Study 2. In Study 3, responses to each instruction will be automatically captured and stored in a database.

Analysis Plan: Study 1 will employ descriptive statistics to describe knowledge, and Chi square, t-tests and ANOVAs to examine differences among the units and demographics. Study 2 data will undergo content analysis by three research team members to develop the specific instructional algorithms for the dashboard. Dashboard responses from Study 3 will also undergo content analysis, and the constant comparative method to identify resuscitation errors, and any factors that are associated with those errors.

Nursing Relevance/Implications: Innovative new technologic methods that have the potential to assist nurses in achieving more positive outcomes of resuscitations of patients need to be designed and tested. If effective strategies can be developed, this could conceivably lead to saving time, money, and lives. Study 1 will use an anonymous online survey to gather data about nurses' knowledge about crash carts and resuscitations. Study 2 will convene two one-hour focus groups.

Abstract

Principle Investigator: Elizabeth A. Richards, PhD, MSN, RN

Research Title: Social and environmental context influences on physical activity motivation

Background: Reducing physical inactivity is a public health priority. Despite well-known benefits, less than 5% of US adults are sufficiently active, suggesting many people lack sufficient support to develop and sustain motivation. Nurses, with their ability to develop trusting relationships, are uniquely positioned to support patients' motivation to make health behavior changes. A clearer, theoretically-based understanding of how individual, social and environmental contexts contribute to motivation for physical activity (PA) can lead to the development of more effective promotion efforts.

Theoretical framework: Self-determination theory (SDT) posits that people can have multiple types of PA motivation that vary in their degree of self-determination, or internal control. More self-determined motivation leads to greater persistence and adherence to behavior change, and more positive psychological experiences. More self-determined motivation can be fostered by meeting individuals' basic psychological needs for autonomy, competence, and relatedness through supportive environmental and social factors. Research is lacking regarding the degree to which social and environmental contexts moderate this process; that is, whether the self-determination processes more effectively to predict PA among individuals who have more expansive (i.e. access to socially supportive and physical activity friendly environments) versus more impoverished social and environmental contexts.

Purpose: The purpose of this research is to examine how social contexts (solo vs. with friends, family, pet) and environmental features (walkability) affect PA motivational processes across time. It is hypothesized that having more self-determined goals, autonomous orientations, and autonomy support for being physically active will predict increased autonomy, competence, and relatedness need satisfaction; and greater need satisfaction will predict increased self-determined motivation which, in turn, will predict greater increases in PA behavior. It is also hypothesized that these positive effects on PA behavior will be stronger when participants have more social and environmental resources in which to engage in PA. That is, being active with friends, family, or pets and having access to a walkable environment (i.e. well-maintained, connected sidewalks; aesthetically pleasing areas to be active; access to places to walk) will enhance the effects of this motivational process on PA.

Methods: Using a market-based research firm, 500 men and women ages of 18-75 will complete three online surveys, one month apart, assessing SDT constructs and PA behaviors. Longitudinal structural equation panel models using full information maximum likelihood (continuous outcomes) or logit (dichotomous outcomes) estimation will examine the degree to which motivational processes supporting PA are moderated by the social and environmental contexts of PA.

Nursing Implications: By understanding theory-based motivations for PA and the effects of social and environmental context on these processes, we will be able to develop nurse-delivered interventions to promote self-determined motivation for PA behavior that are individually tailored based on patient social and environmental context.

Abstract

Principle Investigator: Carol F. Roye, EdD, RN, FAAN

Research Title: Long Acting Reversible Contraceptives (LARCs): A Remedy for Teen Pregnancy that Presents New and Poorly Understood Risks to Reproductive Health

Purpose/Background and Significance: Although adolescent pregnancy rates in the United States have dropped, it still has a persistently high rate, higher than other developed nations. Teen childbearing results in negative outcomes for the teen and her child. While most teens do use contraception at times, only 7% use the most effective methods – the Long Acting Reversible Contraceptive Methods (LARCs), which include IUDs and contraceptive implants. These methods are effective for up to 10 years. Public health efforts are being made to promote LARC use for teens. Yet, there are scant data about teens' perceptions and potential concerns about using LARCs. Furthermore, there is evidence that teens who use hormonal contraception are less likely to use condoms; and they may be less likely to receive routine preventive care, including testing for sexually transmitted infections (STIs) and HIV. This is of great concern because most STIs, including HIV, are asymptomatic and are diagnosed at routine visits.

Therefore the proposed study has three specific aims:
1) Assess the attitudes of sexually active female adolescents (age 15 – 22) about LARCs, and the relationship between LARC use and pregnancy and disease prevention.
2) Assess condom use among 3 groups of sexually active adolescents: a) those who use no hormonal method; b) those who use a user-dependent hormonal method such as oral contraceptive pills (OCPs), the vaginal ring or patch; and c) those who use a LARC method.
3) Assess the likelihood of obtaining yearly preventive care among the same 3 groups of sexually active female adolescents.

Methods: This study will use a mixed methods design. Participants will be recruited at a large university and a Pediatric Clinic in New York City. They will complete a computer-based survey about their sexual behaviors and contraceptive use. Women from each of the 3 groups will be selected to participate in an open-ended survey to assess their attitudes and beliefs about LARCs.

Analysis Plan: Quantitative data will be analyzed using chi-squared and linear regression analysis. A thematic coding scheme will be developed that addresses key concepts of interest, e.g., concerns about acquiring HIV/STIs, and most recent episodes of condom use and nonuse. Quantitative and qualitative data will be triangulated. The researchers will interpret quantitative findings in light of qualitative insights.

Nursing Relevance/Implications: Nurses who work with adolescent women face a dilemma: that of fostering LARC use because of its effectiveness at preventing teen pregnancy, but also promoting condom use and yearly exams. However, they need data about the relationship between LARC use and these health promoting behaviors. This study will inform their patient education for this patient population. Moreover, the PI will use these data to inform an intervention specifically for young women who use LARCs.

Abstract

Principle Investigator: Jean M. Russell, BSN, RN, CRNI

Research Title: Randomized Controlled Study Testing the Effectiveness of an IV Infiltration Risk Assessment Tool in Preventing Grade 3&4 IV Infiltration

Purpose: To measure the effectiveness of an IV-infiltration-risk assessment tool with a corresponding increase in nursing surveillance for patients designated as high-risk.

Background/Significance: Intravenous (IV) therapy is a common hospital procedure not without risk to pediatric patients. Despite attempts to improve procedures and education, infiltration continues to be a frequent adverse event in the pediatric patient. New approaches to improve safety and to identify patients at elevated risk for adverse events are needed. Infiltration injuries are graded from "0" (no symptoms) to "4" (skin degradation, gross edema, circulatory impairment). Most infiltrations resolve spontaneously, but Grade 3&4 injuries require extensive wound care, reconstructive surgery, or even amputation. Patients with Grade 3&4 injuries can have longer hospital stays, increased morbidity and increased costs. Legal claims, 54% of which are adjudicated in favor of plaintiffs with compensation into the tens of millions, also place significant burdens on hospitals.

Methods: This study is a randomized control trial to pilot increased nursing surveillance of IV sites to 30 minutes in the test group compared to the standard of care for pediatric patients at 60 minutes. Setting/Sample: 100 patients, on admission to the ED will be selected based on risk criteria for Grade3 and 4 infiltrations. The criteria for inclusion are: male and females ages 4 to 6 years; females ages 4 to 6 years with BMI> 95thpercentile. We will conduct this study in a 200 bed Magnet designated Children's Hospital.

Procedures: A program implemented within EPIC EMR will flag the patient, based on risk variables, once the catheter and IV order is written. All data will be collected from the IV Therapy Plan in the EMR and downloaded to Redcap, a secure research data tool. All data will be de-identified before analysis. Analysis: Descriptive statistics, t-tests to compare differences, regression modeling, if applicable.

Nursing Relevance/Implications: Through identification of children at risk and improving surveillance of the IV site, we may potentially limit infiltration. Thereby, we may improve patient safety and demonstrate greater quality of care. Additionally, hospitals will demonstrate cost savings with improved quality and safety.

Abstract

Principle Investigator: Judith A. Schreiber, PhD, RN

Research Title: Cognitive Processing, Psychological Distress and Pain: Breast Cancer Survivors

Purpose: To examine the relationships of intolerance of uncertainty (IU) and psychological distress with persistent pain experienced by breast cancer survivors. **Specific aims** are to: (1) examine the relationships of IU and psychological distress with pain: (2) identify the best predictive model for pain in breast cancer survivors: and (3) determine interactions among IU and measures of psychological distress in predicting pain.

Background/Significance: Cancer related distress and persistent pain are often present in earlyand long-term survivorship. Screening for pain is ubiquitous and distress screening is now required for cancer program certification. Causes of distress and pain are multifactorial, vary over time and situation, and reciprocally affect each other; altering psychophysical and psychosocial functioning. Despite this knowledge, many survivors still have uncontrolled, persistent pain. Studying the impact of personality [intolerance of uncertainty] and psychological distress on breast cancer survivors' persistent pain perceptions will increase our knowledge and improve evidence-based care.

Methods: Design: Cross-sectional online survey (paper option also available), **Setting/Sample:** Breast cancer survivors experiencing persistent pain. Inclusion criteria are: survivors having completed initial cancer treatment, $\geq$ 21 years old, able to read/write English, and report cancer related pain. Exclusion criteria are: survivors receiving initial treatment course, and psychiatric diagnoses other than those associated with depression or anxiety. The proposed convenience sample is 85 participants. **Procedures:** Recruitment will be through advertisement at regional oncology practices. All, women interested in participating will receive an Informed Consent Letter (ICF) and a questionnaire packet. The survey can be accessed either on a secure online site (REDCap) or completed as a hard-copy based on participant preference.

Instruments: Patient demographics will be collected (age, ethnicity/race, duration of persistent pain, attributed cause of pain). Additional measures are the following: (1) independent variables - Intolerance of Uncertainty Scale-Short Form; Demoralization Scale; Depression Anxiety Stress Scale (DASS-21); and (2) dependent variable - Short-Form McGill Pain Questionnaire-2 (SFMPQ-2).

Analysis Plan: Descriptive statistics will be conducted to describe the sample and independent and dependent variables. Cronbach's alpha will evaluate reliability. Independent two sample *t*tests and analysis of variance (ANOVA) will be used to determine associations between pain and demographic characteristics and the independent variables. Correlations will assess relationships among independent variables and pain. Simple linear regression and multiple regression will examine effects (main and interaction) of the independent variables on pain.

Nursing Relevance/Implications: Persistent pain continues to be problematic for cancer survivors. Despite decades of pain research, worries about addiction, overdose, tolerance, and side effects remain barriers for survivors' adherence to treatment. This study will inform our understanding of the relationships of survivors' intolerance of uncertainty and psychological distress with pain; providing evidence-based data for developing future cognitive interventions.

Abstract

Principle Investigator: Annie Thomas, PhD

Research Title: Bollywood Dance Intervention to Promote Physical Activity among Asian Indian Adolescents and College going Females: A Pilot Study

The number of children at risk for overweight and/or obesity has increased dramatically in the last decade worldwide. Overweight in children is associated with the development of prediabetes, type 2 diabetes, hypertension, and hyperlipidemia, increasing the risk for developing cardiovascular disease later in life. Although much is known about race differences in obesity among adults, less is known about race and ethnic differences among Asian Indian adolescents and college going students. Most research evaluating obesity intervention measures such as culture specific dancing have focused on Blacks, Whites, and Latin American youth, failing to capture the increasing diversity among Asian Indian immigrants in the US. The proposed pilot study will evaluate the effectiveness of Bollywood dance intervention on cardiovascular risk measures and the physical and mental well being of Asian Indian Adolescents and college going females. A cross sectional, one group pretest post test design will be used to obtain baseline and post intervention data on cardiovascular risk measures. BMI, percent body fat, waist circumference, and blood pressure will be measured and evaluated with respect to age-appropriate norms to provide an index of cardiovascular risk.

A convenience and snow ball sample (N=30) of female Asian Indians, 14-21 years of age will be enrolled from various Asian Indian affiliated community organizations. After participant and parental consent, participants will complete self report questionnaire on demographic and health history. Participants enrolled in the study will engage in a 6-week video intervention classes directed by a skilled Bollywood dance trainer. The trainer will coach for two days/week during the 6 weeks dance intervention. A CD with the training sessions will be given to the participants to continue training session for 60 minutes at home on a daily basis throughout the 6-weeks of the intervention. A subgroup of subjects selected through systematic random sampling will be instructed to wear the Actical Accelerometer on waist region to monitor the engagement in physical activity. This data obtained from this group will be used to compare the research data set obtained through another study conducted among Asian Indian adolescents by this researcher.

Participants will complete the SF 36 Health survey questionnaire after the study. Descriptive statistics will be used for all study variables and cardiovascular risk factors. A dependent t-test or ANOVA will be used to measure the effectiveness of the Bollywood dance intervention. To compare the physical activity among two groups, a Chi-Square or t- test will be used. The implementation of this pilot study will establish feasibility of subject recruitment and the effectiveness of the intervention. The ultimate intent is to obtain preliminary data to guide the development of an obesity prevention program for adolescent and college going female Asian Indians.

Abstract

Principle Investigator: Jennifer Trautmann, PhD, FNP-BC, RN

Research Title: Exploration of parenting challenges with young children during military deployment

Purpose: This study will examine perceptions of parenting needs among military-connected mothers with young children (birth-5 years) whose spouse has been deployed for combat.

Background/Significance: Over 700,000 children had at least one parent deployed for military operations since September 11, 2001 and more than 40% of children in military families are less than 6 years old. Deployments are linked to higher rates of parenting stress, child maltreatment, and mental health problems in military families with young children. Despite evidence of the adverse effects of deployment on military families with young children, little is known about the needs of the parents who are left at home to care for them.

Methods: *Design*. This descriptive cross-sectional study will use Q-methodology. *Setting/Sample*. We will examine perceptions of parenting needs during deployment among 120 mothers in military families with young children. Mothers are eligible for this study if: (1) her spouse is an enlisted military member who is currently deployed, (2) her youngest child is 5 years old or younger, and (3) she currently lives in the U.S. *Instruments*. (1) Q-sort, (2) Parent Stress Index-Short Form (PSI), and (3) demographic questionnaire. *Procedures*. This study will be conducted in 2 phases. In Phase 1, 15-20 mothers meeting eligibility criteria will be interviewed to elicit information on issues surrounding being a military-connected mother raising a young child during her spouses' deployment. Statements related to these mothers' parenting needs will be extracted directly from these interviews for the Q-sort. In Phase 2, 120 military-connected mothers whose spouse is currently deployed will participate anonymously and online to complete a Q-sort, the PSI, and a demographic questionnaire. Mothers will complete the Q-sort by ranking statements of parenting needs along a continuum ranging from "Most Unimportant" to "Most Important". *Analysis*. Q-sorts will be analyzed using by-person factor analysis to elicit groups of mothers who performed similarly on their sorts. Perceptions of parenting needs across groups will be compared to discern commonalities and differences in what needs are considered important or unimportant. We will also examine perceptions of parenting needs by PSI levels and child age to explore how parenting stress and child age may influence the perceived importance of parenting needs for these mothers.

Nursing Relevance/Implications: Despite evidence that military deployments are stressful and have significant adverse effects on spouses and young children, little is known about parents' needs during this vulnerable time. Results will be used to design interventions to enhance the mental health and well-being of military-connected parents and young children.

Abstract

Principle Investigator: Heather L. Tubbs Cooley, PhD, RN

Research Title: Nurse Certification and Infant Outcomes in Neonatal Intensive Care

Purpose: The purpose of this study is to examine relationships between a) individual nurse certification and individual patient outcomes and b) shift composition of certified nurses on shift-level outcomes in neonatal intensive care. We hypothesize that individual nurse certification will be associated with reduced infant odds of developing an adverse outcome during a shift. We also hypothesize that we will observe a dose-response relationship between the proportion of certified nurses working during a shift and the odds of adverse outcomes for infants cared for on the same shift.

Background/Significance: Nursing care in neonatal intensive care units is increasingly complex due to the changing epidemiology and nature of preterm and term-but ill births. Nurse certification is advocated as a way to validate clinical competence in a specialty area of nursing. Prior studies have assessed the theoretically plausible relationship between nurse certification and improved patient outcomes and have demonstrated positive relationships between certification and outcomes. However, these studies are limited by their reliance on aggregated measures of both certification status and patient outcomes that results in heightened risk of ecological fallacy. The recent Institute of Medicine Workshop on Future Directions in Nurse Credentialing Research recommended that future studies of certification link individual patient outcomes to the care of both individual nurses and teams of nurses working together during a shift.

Methods: We propose a secondary analysis of data collected for the Neonatal Nursing Care Quality (NNCQ) Study, an observational, longitudinal study of shift-level nursing organization, care delivery, and neonatal outcomes. We deliberately designed the NNCQ Study to enable analyses of effects of individual nurse characteristics and behaviors during a shift on individual patient outcomes, and our dataset consists of 10,428 matched nurse-infant shifts of data collected from 136 nurses caring for 418 infants in a Level-IV referral NICU over the course of one year. Nurse-level measures in the dataset include nurse certification status, highest degree in nursing, years of nursing experience, and unit tenure. Shift-level care delivery reports link nursing care to individual infants (and outcomes). Longitudinal, multi-level logistic and Poisson regression models will be used to assess relationships between certification and outcomes.

Nursing Relevance/Implications: The results of this study will provide nursing leaders with empirical results that can be used to evaluate financial investments in certification of their nurse workforce. Further, the proposed design and methods can serve as a model for further studies of nurse certification and patient outcomes.

Abstract

Principle Investigator: Sharon J. Tucker, PhD, RN, PMHCNS-BC, FAAN

Research Title: WellMe in 3™ Short Burst Activity Scenarios for Patients with Chronic Illness

A strong and irrefutable body of evidence indicates that physical activity (PA) has multiple health benefits. Yet, less than 10% of people living in the US achieve recommended PA levels to reap the benefits. Multiple factors contribute to this shortcoming including sedentary occupations and daily activities, transportation efficiencies, and competing time demands. Those living with chronic illness/disease and the elderly face even more barriers due to fatigue, low energy levels, pain and functional limits. Growing research indicates that low impact PA completed in small bursts spread throughout the day, rather than intensive bouts of 30-60 minutes, produces health benefits. Nurses can capitalize on these findings and develop and implement innovative PA programs that can be adopted by patients with chronic illness and/or those over 70 years of age. Guided by self-efficacy theory, a program called *WellMe in 3*™ was developed for nursing staff to provide a worksite PA program using brief follow-along video segments lasting about 3 minutes and can be completed in any attire and setting.

The program has been made available to healthcare staff and has been included in a menu of options for an intervention study for nursing employees aimed to increase awareness and action related to building PA into daily work and home routines. The current application builds on this work and proposes to create and evaluate a *WellMe in 3*™ ***Patient Program*** designed to demonstrate and promote low-moderate levels of PA for people with chronic diseases of cancer, heart disease, and diabetes and for those over the age of 70. An advisory panel consisting of 15-20 patients living with chronic conditions and/or are 70 or older will be formulated to guide the creation of eight 3-minute video scenarios demonstrating aerobic activities (standing, sitting, dance, resistance/strengthening), and four 3-minute video scenarios demonstrating stretching (including yoga) and balance. Advisory panel members will work with a health and fitness expert to produce and participate in the video scenarios. Following development of the scenarios, 50 patients living with chronic conditions and/or are 70 years or older will be recruited to pilot the scenarios for one month.

We will evaluate preliminary effects using standardized instruments for PA levels, PA self-efficacy, and quality of life; and we will evaluate acceptability and usability using instruments we developed. Descriptive and inferential statistics will be used to evaluate preliminary outcomes regarding change over time. Barriers and facilitators will be identified through narrative comments from an evaluation survey. Preferences for various scenarios and frequency of use will be tracked. Findings will inform additional research with a bigger sample and adaption by nurses and other clinicians in inpatient and outpatient clinical settings.

Abstract

Principle Investigator: Dorothy Vittner

Research Title: Bio-behavioral Mechanisms during Skin to Skin Contact with Preterm Infants

Problem: The neonatal intensive care unit (NICU) environment is a stark contrast to the neurobiological expectations of developing infants and can induce parental stress and anxiety that have lifelong effects. Fundamental to the infant's developmental trajectory is early parent-infant contact. Maternal touch, especially during skin to skin contact (SSC) reduces adverse consequences of prematurity. The purpose of this study is to examine bio-behavioral mechanisms associated with maternal and paternal skin-to-skin contact (M-SSC and P-SSC) with premature infants. Specifically, we hypothesize that the changes that occur in infant and parental (mother and/or father) OT levels during SSC will be associated with simultaneous reductions in stress and with later outcomes reflecting improvements in neurobehavioral development and responsiveness to parental-infant interaction.

Method: This randomized cross-over design study will use a 3-day timeframe conducted in the NICU. The sample consists of 28 stable preterm infants (30 0/7 – 34 6/7 weeks gestational age that are 3 - 10 days old) and their mothers and fathers (triads). After informed consent, each triad will be randomly assigned to one of two sequences: M-SSC is conducted on day 1 and P-SSC on day 2; or P-SSC on day 1 and M-SSC on day 2. Infants' and parents' saliva samples for oxytocin (OT) and salivary cortisol (SC) assays will be collected pre-SSC, 60-min during-SSC, and 45-min post-SSC. Infants' spectral analysis of heart rate variability (HRV), and parental anxiety will be measured at the same three time points. In addition, infant outcomes will be examined in relationship to parent (mother and/or father) OT, cortisol levels and anxiety scores. The Neonatal Network Neurobehavioral Scale (NNNS) will be collected at 35-36 weeks postmenstrual age prior to hospital discharge. The parent-infant interaction assessed during a 5-minute video using DMC will be completed after the NNNS exam. Analyses of study data will apply bivariate statistical methods to test for changes in infant, maternal and paternal OT levels between the pre-SSC, during-SSC and post-SSC periods. Correlations between changes in infant OT levels and simultaneous changes in HRV will be investigated as well as associations between coincident changes in parental OT and SC levels. Relationships between changes in infant OT levels during SSC and later levels of NNNS and DMC scores will be evaluated and between parental OT levels during SSC and subsequent DMC scores.

Significance: M-SSC has shown beneficial effects on the physiology and behavior of premature infants and their mothers. Limited results have shown beneficial effects of P-SCC. We aim to address the critical gap and increase understanding of the mechanisms that link parent-infant contact to bio-behavioral responses. In addition we aim to identify strategies that might be used in the future to enhance endogenous OT levels in mothers, fathers and infants.

Abstract

Principle Investigator: Vicki R. Voskuil, PhD(c), RN, CPNP

Research Title: Predicting Physical Activity Among Urban Adolescent Girls: A Test of the Health Promotion Model

Purpose: The purpose of this study is to test hypothesized relationships of the Health Promotion Model (HPM) as a means of predicting accelerometer-measured physical activity (PA) in a sample of urban adolescent girls.

Background/Significance: Despite well-established health benefits of PA, the majority of adolescent girls do not meet physical activity guidelines. Given the declines in PA with greater age, and the limited success of interventions to increase PA among girls, there is a critical need to test and refine theoretical models to develop effective theory-based interventions. A major limitation of model testing has been the reliance on self-reported PA. In addition, very few studies have tested models of PA among girls using accelerometer-measured PA. While the HPM has been used to successfully predict and explain adolescent PA, no studies have tested the HPM using an objective measure of PA. The primary aim of this study is to test relationships of the HPM to predict accelerometer-measured PA among adolescent girls. A secondary aim is to conduct test-retest reliability on a measure of situational influences, one of the explanatory variables in the HPM.

Methods: The primary study aims rely on a secondary analysis of baseline data collected from 5th - 8th grade girls from year three of a group randomized controlled trial (RCT). The sample includes girls in eight urban middle schools in the Midwest (n=519). The secondary aim will be carried out by conducting test-retest reliability on the Perceived Environment Scale for Youth, a measure of situational influences. Adolescents in the 5th - 8th grades will be recruited from a middle school that did not participate in the group RCT. Procedures for test-retest reliability study will be similar to the group RCT. The variables being used for model testing include age, body mass index, pubertal status, self-efficacy, enjoyment, social support, environment, commitment, and accelerometer-measured moderate to vigorous physical activity. The primary aim of the study will be analyzed using a structural equation modeling approach to explore the fit of the data to the hypothesized HPM. The secondary aim will be analyzed by calculating the intra-class correlation coefficient using a two-way fixed-effects model to determine test-retest reliability.

Nursing Relevance/Implications: This study is innovative in that it is the first to evaluate the HPM with accelerometer-measured PA. Findings from this analysis may contribute to new knowledge of health behavior for future design of effective theory-based interventions aimed at increasing PA among adolescent girls. This study can also advance nursing science by testing and refining a nursing middle range theory. Additionally, advanced practice nurses can incorporate findings from this study by targeting key variables that predict PA among inactive adolescent girls.

Abstract

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Research Title: Genetic Mechanisms of Aromatase Inhibitor-Associated Arthralgia

Purpose: Aromatase inhibitors (AIs) have been established as the most effective adjuvant therapy for breast cancer survivors. Unfortunately, nearly half of the women taking AIs report AI-associated arthralgia (AIA) as an adverse effect. Currently, the exact mechanism of such a condition is poorly understood, and consequently, patients are undertreated. **Thus, the purpose of this preclinical study is to investigate genetic and biomarker correlates of AIA. We hypothesize that the AI-treated group will show a different core set of genes that functionally relates to pain mechanisms and significantly changes compared to the control group.**

Background/Significance: Breast cancer is the most frequently diagnosed cancer and ranks second as a cause of cancer death among women in the U.S. AIs play a critical role in decreasing estrogen, a primary stimulant of breast cancer progression, thereby preventing cancer recurrence. Treatment with AIs has been recommended because it offers improved disease-free survival. Estrogen deprivation has been suggested as a key hypothesis of AIA; however, the pathway is not clear. Since AIA may be the result of long-term changes in gene expression and subsequent pathobiology in the spinal cord, we will conduct a whole-genome microarray analysis of spinal dorsal horn, which is the principal region of pain transmission and modulation, following AI therapy. This study will increase our understanding of AIA and contribute to the development of new therapeutic targets.

Methods: This study is a randomized controlled experimental design. We will use banked mouse tissue obtained from a previous study in which the mice were confirmed as having AIA. To mimic the clinical state of breast cancer, ovariectomized female athymic nude mice were inoculated with breast tumor cells, and the tumor was excised at 6 weeks. After tumor excision, weekly behavior tests and daily injections of letrozole or the vehicle were started. After 5 weeks of AI treatment, fresh spinal cord tissues were harvested. We are going to conduct a microarray analysis on tissues from 3 drug-treated and 3 control mice to examine the global gene expression linked to central pain signaling pathways, followed by qPCR1 to confirm the gene expression. A two-sample t-test will test for differences between two groups in expression levels of mRNA by qPCR and genes by microarray. Selection criteria of genes require a minimum 2-fold change ($p<.05$).

Nursing Relevance/Implication: The anticipated study findings will provide oncology nurses with in-depth knowledge of biological mechanisms of AIA, enable them to promptly identify abnormal symptoms and expect progression. Nurses also will be empowered to translate information associated with genetic research and educate cancer survivors effectively for comprehensive care. In addition, our study will lead the way for nurse researchers to develop novel therapeutic agents to prevent or decrease AI-induced joint pain in clinical studies.