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Editorial

The making of a nurse scientist: A personal narrative



Why?

The question every child incessantly asks started my journey to become a nurse scientist. This editorial is adapted from a keynote speech I delivered for the 6th Qilu International Young Nursing Scholars Forum sponsored by Shandong University School of Nursing and Rehabilitation. As you read, I ask you to keep in mind that the times and world in which I started my journey no longer exist.

I do not remember a time when my older brother was able to walk without a limp. He had developed polio when I was still an infant, just months before the Salk vaccine was tested in children in a large national study [1]. Polio was not only a dreaded disease but also a shaper of my family's dynamics. Much of our family life centered around my brother's surgeries and rehabilitation, but my parents chose to normalize life for all my siblings. A tribute to their success was that we did not perceive the stigma that others saw in his limping gait and atrophied leg and foot. We were raised in this climate of acceptance and each of us was encouraged to achieve our fullest function. It was an amazingly powerful and loving environment, and it shaped my view of the world as a glass half full, rather than half empty. I realize now that my brother's experience would later lead me to my life's work; I would become a nurse. But I also needed answers to my questions: *Why couldn't he run and play with me? Why did he get polio while I did not?* The guilt I felt from being the "healthy child" compelled me forward and energized me. I knew at a very young age that I wanted to find answers that would help me better the lives of others.

After turning 16 years old I became a nursing assistant in a local nursing home. That work experience was transformative and deeply influential in fueling my desire to become a nurse. Even now, I can recall the shock I felt when I first realized that many of the residents were incontinent of urine and some were incontinent of both urine and stool.

Something happened to the teenaged me that summer. There was a burning sense of righteous anger for the older adults. I was horrified that people lived long lives only to end up sitting or lying in their own urine or stool. Although it seemed wrong, at that time there was little to no research or educational resources available to challenge the prevailing practice; we, the nursing assistants, were instructed to "check and change" and to keep the residents "clean and dry." We were told and believed that incontinence happened because they were old. And that, sadly, was that.

However, an observation I made then nagged at me. Not everyone in that nursing home was incontinent. There were several residents who independently toileted or used a urinal or bedpan

and never had an "accident." I kept wondering: *why?*

Looking for answers I went to nursing school, where many of my clinical rotations were in hospitals. But even then no one mentioned that we could do something for an older person with urinary incontinence other than "check and change." During this time, another disquieting observation I made nagged at me. Some older adults were admitted continent, but during their hospital stay they became incontinent and were discharged as incontinent. Now, clearly, they were admitted for surgery or treatment of serious illnesses and diseases; indeed, those factors could have been associated with the new incontinence, but the point is, we the nursing staff never questioned it. We assumed and accepted that this was the way it was; elderly people were incontinent, and it was our job to keep them clean and dry. There was no further discussion, and that bothered me.

I think there is a patient every nurse remembers; this is the patient that changes the nurse's path. I had one such patient 5 years into my nursing career. An elderly gentleman who had never been hospitalized was admitted with abdominal pain. I remember him telling me that he had been sitting on a stone wall on his farm waiting to watch the sunset, something he did every evening. But on this evening, he had a sudden and severe abdominal pain. His family took him to the emergency department and he was admitted to the hospital. Eventually he had surgery for an intestinal obstruction and after a few days in the ICU he was readmitted to our nursing unit. I remember that I did not recognize him because someone had shaved off his full mustache, and he was disoriented, incontinent, and restrained. He subsequently was sent to a nursing home. I remember asking myself: *What happened to him? What could we have done to preserve his cognition and function? Could he have returned home with support?*

It was not long afterwards that I decided to go to graduate school to learn how to prevent this chain of events from happening to other older adults.

Graduate school was another transformative experience. I focused my studies on urinary incontinence in the elderly and consumed as much research literature as I could get my hands on. I conducted an exhaustive literature review on urinary incontinence in older adults as my final scholarly product, which I eventually developed into a book to be a resource to other nurses [2]. It was during this process that I realized many myths about urinary incontinence existed in nursing practice and needed to be dispelled, through evidence.

I also continued to ask questions for which there were no ready answers: *Did our actions contribute to the development of urinary incontinence during hospitalization? Why do some older adults develop urinary incontinence, but not others?*

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Thus, I decided to learn how to find answers through the scientific process. The mid-1980s were a time of growth for the nursing profession and an opportunity for nurses who wanted to conduct research. At the national level in the United States considerable energy was being exerted by visionary nurses and others for the creation of a center of nursing research at the National Institutes of Health [3], and nurse educators were pursuing doctoral degrees in increasing numbers.

After a comprehensive review of the literature, I concluded that urinary incontinence was a significant health and quality of life condition across the life course and was not solely a nursing clinical management issue. I wanted to further investigate it as a doctoral student at Johns Hopkins University School of Hygiene and Public Health (now the Bloomberg School of Public Health).

Fortunately, I was encouraged to fly, to follow my research interest, to form a solid argument or rationale for the significance of the problem, and to think of the big picture that, in fact, urinary incontinence was an important geriatric public health issue. I had mentors who taught me that asking and attempting to answer ambitious questions was the very point of science inquiry, and they encouraged me to follow my research interest to investigate urinary incontinence in nursing home residents.

For my dissertation I conducted secondary analyses of data from a study that had followed older adults living in eight nursing homes over the first year after their admission [4]. My dissertation identified urinary continence status changes over the first 2, 6, and 12 months after nursing home admission and it was one of the first of its type to identify incidence, prevalence, and risk factors for urinary incontinence in this population [5]. My academic advisor's encouragement of my scholarship helped shaped my approach to mentoring throughout my academic career. Her personal integrity, intellectual curiosity, and desire to improve care in the geriatric long-term care system through scientific evidence were instrumental in shaping my teaching and mentoring philosophies.

In my doctoral program I was required to have 300 hours of research experience and my advisor told me about a study, at the National Institute on Aging, Gerontology Research Center, Laboratory of Behavioral Science, on prompted voiding in nursing home residents [6]. I volunteered to work in the laboratory and was provided an opportunity to conduct my own research. It was a simplistic descriptive study, a retrospective medical record review in a nursing home that provided necessary foundational evidence about the level and consistency of documentation of urinary incontinence and its treatment. An abstract of this research was accepted at a national conference and the manuscript was accepted for publication [7]. My mentor at NIH used this model of supervised mentee research with the goal of producing an abstract and a manuscript; this model later became a key element of my mentoring of graduate students, junior faculty, and visiting international scholars over the years.

My post-doctoral training was at the National Institutes of Health. I ultimately spent six years there, first on an Intramural Research Training Award and later as a Staff Fellow and Senior Staff Fellow. It was during this time that another question nagged at me: *Can urinary incontinence in adults be prevented?* This question resulted from observations and evidence that behavioral interventions, designed for older adults living in nursing homes who had established urinary incontinence and functional and cognitive impairments, were difficult to sustain over time. I believed it was time to think about prevention of urinary incontinence and conservation of urinary continence. I began to study behavioral research intensively and incorporate principles from public health into my scholarship.

One outcome of this investigation was the development of the urinary continence health promotion conceptual model. The

physical environment was included in this model in addition to intra-individual factors. Potential primary prevention strategies were introduced including public and healthcare provider education, and environmental modifications [8]. Later I advocated for primary prevention strategies for older adults at risk for developing urinary incontinence [9] and for using behavioral change theories to guide the development and testing of urinary incontinence interventions [10]. I believed that posing new research questions, providing strong rationale for the significance of these problems, and linking research to theory were vital efforts to propel the research area forward.

After I joined academic nursing I continued to use the scientific process to answer new questions including: *How does urinary incontinence affect working women?* During a presentation I gave at the Johns Hopkins University Bloomberg School of Public Health, this question was asked by an occupational health researcher who also was a nurse. It set the course for a new collaboration. Our subsequent research provided evidence that many working women had incontinence and struggled to manage it on the job [11]. We also found that incontinence, at times, interfered with work, as many women had limited access to toilet facilities during the work day due to the nature of the work, location of the toilets, and embarrassment from asking for a restroom break [12].

During this time other researchers were engaging in investigating urinary incontinence and overactive bladder in different populations. These efforts highlighted the growing recognition that urinary incontinence was a significant and important public health issue [13]. As evidence mounted, multiple researchers began advocating for investigation of bladder health promotion and prevention of urinary incontinence and other lower urinary tract symptoms [14].

As we know, science is a communal activity. Throughout my career I worked with many individuals, research teams, and professional groups to create a critical mass of nurse scientists and scientists in other disciplines actively engaged in understanding the natural history of urinary incontinence, its mechanisms, and effective interventions. These investigations were and remain important for the science to advance and for all people to benefit from our scientific output. Over my scientific career a paradigm shift occurred in my research area. It moved away from solely focusing on evidence about managing and treating urinary incontinence to focusing on investigating bladder and pelvic health promotion. Investigating toileting behavior in women became a focus in my later research [15,16] with the long-term objective to reduce urinary incontinence incidence as women aged. Being part of a large scientific community engaged in investigating the promotion of urinary continence and the prevention of urinary incontinence was an intellectually stimulating and rewarding endeavor.

The lifelong urge to ask *Why*, to systematically explore phenomena, to link research to theory, to devise new and use existing methods to gain knowledge, and to share with others, is as strong in me as ever. Over the years I have observed that there are many measures of success as a scientist. The Director of the National Institutes of Health, National Institute of Nursing Research, Shannon Zenk, PhD., defined success by saying, "success is truly making a difference in people's lives, their living conditions, and their health, and about being sure no population is left behind" [17].

The scientific process is the best human solution we have available to reduce bias and error from systematic investigations, and we should use it rigorously and ethically. This process allowed me to collaborate with others to discover and share knowledge as I built my research program over time.

The making of a nurse scientist is a long and winding road. It is filled with ups and downs, but it truly is a path of discovery. One discovery I made early on was that I would face significant

challenges. These challenges came in many different forms. As an example, despite the full support of my academic advisor and dissertation chair, there were some faculty members who did not understand or immediately support my argument that urinary incontinence was a significant geriatric public health issue. Later in my career, some colleagues were hesitant to embrace investigations in the primary prevention of urinary incontinence for specific groups.

I faced these challenges by trying to understand the perspective other people used when thinking about the problem. For example, if aging was perceived as a “second childhood” or urinary incontinence was considered to be a normal part of the aging process, then urinary incontinence would be viewed as natural or as another facet to being old and therefore there was no need to intervene. There was sufficient evidence to refute this perspective. My objective then was to present an alternative perspective that urinary incontinence was a manageable, treatable, and potentially preventable condition by using existing evidence in cogent and strong arguments. Thus, I published and presented evidence that urinary incontinence was indeed prevalent but not universal in the older population, and it was associated with significant morbidity, and was costly both directly (i.e., financially) and indirectly (i.e., impact on quality of life).

Later, I highlighted emerging evidence about mutable risk factors for urinary incontinence in older people and in adult women, began linking evidence to behavioral theories, and initiated collaborations with other researchers who were interested in investigating complex relationships among bio-psycho-social factors to promote bladder health in women. It takes considerable time and energy to present and discuss arguments in different venues and with different audiences, and often progress was measured by slow incremental shifts in perspective. Being an active listener and possessing good oral and written communication skills were and are important to encourage debate and collaborations. I found that having the ear of stakeholders (i.e., regulators and policy makers) and leaders in specific research areas helped to promote the argument. Being persistent but not defensive, being cognizant that others were also concerned about and were investigating urinary incontinence in older adults, and being recognized as an expert in the area were also important in meeting challenges I faced.

Early on I made a conscious decision to continue learning about new methods and statistical techniques, to improve my ability to respond to feedback constructively, and to be as objective as possible about my own work. I engaged in formal and informal leadership training throughout my career to better understand myself and to be a good leader and member of a team. Knowing myself was, and is, important, especially when I was feeling tired or frustrated. Sometimes (i.e., when a grant was not funded or I got unexpected results from a study) I asked, “What are my next steps now? What is the best way forward to revise and resubmit a research proposal or manuscript? Are other preliminary studies required?” At other times I needed to ask, “Did this experiment ‘fail’? What can I learn from this experience? These are times when reaching out to mentors, collaborators, other scientists, consumers of research, family, and friends for support is essential. Many times, talking through setbacks helped me see the plan of action I needed to take.

Another challenge that arose in my scientific career was the need for preliminary data using different methodologies. As an example, to show others that urinary incontinence was a significant geriatric public health condition, I needed epidemiologic data that didn't yet exist. Fortunately, I attended a school of public health where epidemiology was prominent in most of my doctoral courses and I had access to an experienced epidemiologist who served on

my dissertation committee and statisticians who provided ongoing consultations to me.

Later in my career, it became clear I needed to understand what women themselves thought, said, and did about urinary incontinence, therefore qualitative methods were needed to answer my research questions. This required me to learn as much as I could about qualitative methods through reading multiple methodology texts and high-quality papers, consulting qualitative research experts, and adding individuals with experience in conducting qualitative research to the team. Knowing that I was ultimately responsible for the quality of the study and resulting papers spurred me to be knowledgeable about and confident in the study protocol and to build safeguards into studies to ensure the use of rigorous methodology. I found that although methods varied among studies, the scientific principles themselves did not.

It is an exciting time to be a nurse scientist. We are witnessing great scientific advances in nursing. Our scholarly efforts, ability to think critically, conceptualize and pose significant research problems, conduct rigorous and ethical research in nursing, interdisciplinary, and transdisciplinary research teams, and disseminate research findings to multiple audiences will be instrumental in furthering these advances. Our personal paths are interwoven with our professional paths and it is up to each of us to create our unique blended path. As nurse scientists we support and pass on what we learn to other scientists, both new and seasoned. Through our science, we will change the lives and health of others. What a wonderful journey we are on.

Author's note

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