Nurse Practitioners’ Knowledge, Experience, and Intention to Use Health Literacy Strategies in Clinical Practice

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Nurse practitioners’ (NPs) knowledge of health literacy, their experience with health literacy strategies, and their intention to use health literacy strategies affect not only their individual patient-provider encounters but also the health care delivery system overall. This impact is most felt in the areas of communication and patient safety.

Health care providers must ensure safe and effective communication with patients of all literacy levels. Patient safety continues to be a concern for the health care system (Adams & Corrigan, 2003; Institute for Healthcare Improvement, n.d.; Institute of Medicine, 2000). The Joint Commission (2007) stated that “the safety of patients cannot be assured without mitigating the negative effects of low health literacy and ineffective communications on patient care” and described “effective communication as the cornerstone of patient safety” (p. 5). Communication between providers and patients must be clear to avoid serious errors in the hospital and the community. In describing the attributes of a health literate organization, Baur and colleagues (2012) recommend that the organization “uses health literacy strategies in interpersonal communications and confirms understanding at all points of contact” (p. 4).

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A review of the literature revealed few studies that explored NPs’ knowledge of health literacy and use of health literacy strategies in practice. Investigations exploring health care providers’ knowledge of health literacy looked at groups of providers which included registered nurses or NPs in their samples (Barrett, Puryear, & Westpheling, 2008; Cormier & Kotrlik, 2009; Jukkala, Dupree, & Graham, 2009; Scheckel, Emery, & Nosek, 2010; Schlichting et al., 2007; Schwartzberg, Cowett, Van Geest, & Wolf, 2007).

Jukkala and colleagues (2009) surveyed health care providers, including nurses, using the Limited Literacy Impact Measure. This study found that participants were not knowledgeable about the prevalence of limited health literacy and that nurses were the group with the least health literacy knowledge. Schwartzberg and colleagues (2007) reported that in studying techniques used by physicians, nurses, and pharmacists, health literacy strategies were used, but not routinely incorporated into clinical practice.

Schlichting and colleagues (2007) surveyed NPs and physicians in community health centers and found that the providers who had received formal training in health literacy were most likely to use evidence-based strategies to educate low health literacy patients. The providers were reported to be aware of the presence of low health literacy, but many were not aware of the strategies to work with patients affected by it.

Payne (2009) reported on the frequency and perceived effectiveness of registered nurses’ use of teaching techniques in a self-reported survey. The author found that nurses used simple language, patient assessment of previous knowledge, and presentation of one or two concepts at a time frequently. As strategies for patient education, nurses perceived the techniques effective.

Cormier (2006) studied 350 senior baccalaureate nursing students using the instrument, the Health Literacy Knowledge and Experience Survey (HLKES), Parts I and II. Knight (2011), using the same instruments, surveyed 141 registered nurses in the state of Georgia. No reliability measures were reported for the HLKES Part I. The reported reliability for the HLKES Part II was found to be adequate in both studies with a Cronbach’s alpha 0.82 and 0.81, respectively. A thorough review of previously published studies revealed no other validated instruments measuring the phenomena of interest. Thus, the decision was made to use the HLKES Parts I and II in this investigation and develop an instrument to measure intention, based on the Theory of Planned Behavior guidelines (Fishbein & Ajzen, 2010).

Method

Study Design and Data Collection

A descriptive, correlational design was used in the study. The following research questions were asked:

1. What is the level of knowledge about health literacy and health literacy strategies in NPs working in the outpatient practice setting?
2. What is the experience of NPs with health literacy strategies in the outpatient practice setting?
3. What is the intention of NPs who work in the outpatient practice setting to use health literacy strategies in their clinical practice?
The target population for the study was NPs currently practicing in an outpatient setting. A convenience sample of NPs ($n = 456$) who attended an annual educational conference for NPs was used. All attendees were invited by the researcher to participate in the study. Invitation began with a notification flyer posted on the message board for NP attendees. The flyer was also available on the researcher’s table which was located in a conference hallway. Flyer information was placed on a large poster next to the table.

Potential participants were briefly interviewed at the table by the researcher to ensure they met the inclusion criteria of a NP working with patients in an outpatient practice setting. NPs who were not currently working with patients, working with patients in an inpatient setting, and NPs with an acute care NP certification were excluded from the study sample. The number of NPs who were interviewed and not eligible to participate was not tallied by the investigator.

If the potential participant met the criteria for inclusion, the study was explained and the instruments were given to the participant to complete, with instruction to return the completed instruments to the table. There was an option for the participant to complete the instruments online with a URL link printed on the introductory cover page. Participation in the study was voluntary, with an incentive of an iPad2 raffle prize for those participants who completed the survey instruments and returned them before the end of the conference. No surveys were received by the investigator after the conference end date.

Institutional review board permission was obtained from the college. Permission was also obtained from the NP organization hosting the educational conference where the data was collected. All data were kept confidential, and no identifying information was collected on the instruments. Raffle forms with contact information were shredded after the raffle was drawn. All data were kept in a locked file in the investigator’s office. Internet survey results were password protected, and the researcher was the only holder of that password. Data coding sheets were used and data were reported on the aggregate level. Consent was implicit upon the completion and return of the survey.

Participants were administered the Health Literacy Knowledge and Experience Survey, Parts I and II (Cormier, 2006), the researcher-developed Health Literacy Strategies Behavioral Intention Questionnaire (HLSBI) (Cafiero, 2012), and a demographic questionnaire. Demographic data were collected from all participants including age, gender, educational preparation, years of practice as a NP, area of NP certification, and current practice setting.

All instruments used in the study were self-report instruments. The Health Literacy Strategies Behavioral Intention Questionnaire (HLSBI), examined the intention of NPs to use health literacy strategies. This instrument was constructed according to the theoretical framework of the theory of planned behavior (Ajzen, 1985; Fishbein & Ajzen, 2010), and investigated attitudes, beliefs, and behavioral intention.

**Statistical Analyses**

Data were entered using the SPSS version 19 (SPSS, Inc., 2010). Descriptive statistics, including means, frequencies, and percentages, were used to describe the sample demographically with age, gender, educational preparation as an NP, number of years in practice, NP certification, and practice setting as variables.
Mean, minimum, and maximum scores were tallied for the Health Literacy Knowledge and Experience Survey (HLKES), Parts I and II and Health Literacy Strategies Behavioral Intention Questionnaire (HLSBI). Frequencies of responses to these instruments were investigated for each instrument. Instrument reliability was explored, using Cronbach’s alpha to determine the internal consistency of the instruments overall, as well as the subscales.

Tests of association were performed using Pearson Product Moment Correlations to identify relationships between the participants’ scores on the knowledge, experience, and intention instruments. Spearman’s rho was calculated to investigate relationships between (a) age, knowledge, experience, and intention scores; and (b) years of practice and knowledge, experience, and intent scores. A t-test was used to investigate whether there was a statistically significant difference in the means between: (a) gender (male and female participant scores) and the mean scores on knowledge, experience, and intention instruments; and (b) area of NP certification and mean scores on the knowledge, experience, and intention instruments.

A one-way analysis of variance (ANOVA) was conducted to assess for differences in the mean of two or more groups. These groups included (a) four levels of educational preparation (postbaccalaureate, master’s, postmaster’s, and doctorally prepared NPs) and (b) seven types of clinical settings (outpatient not-for-profit primary care clinic; outpatient for-profit primary care clinic; home-based care; school-based services, episodic urgent care, specialty practice and other) compared to the participants’ mean scores on the knowledge, experience, and intention instruments.

After following the analysis of variance test, two groups—educational preparation and practice settings—were noted to have statistically significant differences in the mean experience scores. Post–Tukey Honestly Significant Difference (HSD) testing was performed on these groups.

Results

From a population of 5,680 NP attendees, 650 survey packets were distributed. Four hundred seventy survey packets were returned, a 73% return rate. There were 469 paper surveys received in person and 1 survey received online. The final number of usable participant surveys totaled 456, with 14 surveys discarded because of insufficient data (greater than 50% of all three instruments left blank) or inclusion criteria not met.

Demographics

The sample consisted of predominantly female, master’s prepared NPs with a certification in family practice. Most of the participants had years of experience ranging from 2 to 20 years in outpatient practice settings. The outpatient setting where participants worked was described as outpatient primary care two thirds of the time, with specialty practice being the next most frequently reported practice setting.

NP Health Literacy Knowledge

Knowledge items were categorized into content areas which were: basic facts about health literacy, consequences of low health literacy, health literacy screening, guidelines for written health materials, and evaluation of health literacy interventions. A synopsis of the scores is provided in Table 1.
In the content area of basic facts about health literacy, the participants were able to identify groups that are at higher risk for low health literacy, but did not identify higher prevalence in older adults. Knowledge of the consequences of low health literacy was demonstrated by over three quarters of participants. Most participants answered all four questions in this content area correctly. Many participants, greater than 75%, responded correctly on the questions regarding guidelines for written materials. However, when asked about the Fry readability formula, used to assess written materials, half the participants could not identify this tool correctly, and 37 participants (8.1%) left this answer blank.

Participants overwhelmingly \((n = 433, 95\%)\) demonstrated understanding of how to approach a patient when initiating a health literacy screening. But health literacy screening instruments were not familiar to many participants. Participants were unable to identify the Rapid Estimate of Adult Literacy in Medicine (REALM) as a health literacy screening tool \((n = 265, 58.1\%)\), or the Test of Functional Health Literacy (TOFHLA; \(n = 372, 81.6\%\)). Some participants chose to leave the questions that related to the screening instruments of REALM and TOFHLA unanswered \((n = 11, 2.4\%\) and \(n = 13, 2.9\%,\) respectively).

The two questions on evaluating health literacy interventions were answered correctly by most participants. The question that specifically asked about the teach-back strategy was answered correctly by 354 participants \((77.6\%)\). Participants also answered correctly on how to recognize low health literacy in patients \((n = 433, 95\%)\).

NP participants had some knowledge of health literacy and health literacy strategies, but the overall knowledge score was low. Participants responded correctly to questions on low health literacy prevalence among certain groups, consequences of health literacy, guidelines with written materials, and evaluation of health literacy interventions. Questions pertaining to health literacy’s effect on health care status, screening tools for low health literacy, and evaluation measures of education materials were most often incorrect.

**Table 1. Mean scores on the health literacy knowledge and experience survey, part I \((n = 456)\)**

| Total score | Minimum | Maximum | SD  |
|-------------|---------|---------|-----|
| Knowledge: Total items correct | 29   | 19.94   | 6  | 28  | 3.50
| Content area: Basic facts | 6   | 3.23   | 0  | 6   | 1.14
| Content area: Consequences of low health literacy | 4   | 3.32   | 0  | 4   | 0.86
| Content area: Health literacy screening | 6   | 3.68   | 0  | 6   | 1.11
| Content area: Guidelines for written materials | 11  | 7.98   | 1  | 11  | 1.77
| Content area: Evaluation of health literacy interventions | 2   | 1.73   | 0  | 2   | 0.48
Table 2. Responses to health literacy knowledge and experience survey, Part II (n = 448)

| Question                                                                 | Never n (%) | Sometimes n (%) | Frequently n (%) | Always n (%) | No response n (%) |
|--------------------------------------------------------------------------|-------------|-----------------|------------------|--------------|------------------|
| How often did you use a health literacy screening tool to assess health literacy? | 299 (65.6%) | 109 (23.9%)     | 32 (7.0%)        | 8 (1.8%)     | 8 (1.8%)         |
| How often reading materials were evaluated for reading level before using them for patient teaching? | 146 (32.0%) | 174 (38.2%)     | 104 (22.8%)     | 24 (5.3%)    | 8 (1.8%)         |
| How often did you evaluate the cultural appropriateness of health care materials? | 73 (16.0%)  | 183 (40.1%)     | 154 (33.8%)     | 38 (8.3%)    | 8 (1.8%)         |
| How often do you use written patient education materials?                | 11 (2.4%)   | 89 (19.5%)      | 267 (58.6%)     | 80 (17.5%)   | 9 (2.0%)         |
| How often do you use audiotapes for patient education?                   | 316 (69.3%) | 107 (23.5%)     | 24 (5.3%)       | 0 (0%)       | 9 (2.0%)         |
| How often do you use videotapes for patient education?                   | 236 (51.8%) | 168 (36.8%)     | 41 (9.0%)       | 2 (0.4%)     | 9 (2.0%)         |
| How often do you use computer software for patient education?            | 194 (42.5%) | 197 (43.2%)     | 49 (10.7%)      | 7 (1.5%)     | 9 (2.0%)         |
The reliability for the HLKES Part I was measured with Cronbach’s alpha ($\alpha = .57$).

**NP Health Literacy Experience**

The participants described the use of written materials with attention to cultural appropriateness of the material as the most frequently used patient education strategy. Evaluation of the reading level of the written materials was reported as done “never” by one third of the participants and “sometimes” by another third. Audiotapes, videotapes, and computer software were used less often, if at all. Table 2 provides a synopsis of the number and types of responses. The reliability for the HLKES Part II was measured with Cronbach’s alpha ($\alpha = .69$).

**NP Intention to Use Health Literacy Strategies**

The participants’ responses for the Health Literacy Strategies Behavioral Intention Questionnaire (HLSBI) had a mean score of 5.44 for each item out of a possible 7-point Likert scale. According to Fishbein and Ajzen (2010), the higher the score, the greater the likelihood participants intend to demonstrate the behavior. Reliability, as measured by internal consistency, was found to be adequate as measured with Cronbach’s alpha of ($\alpha = .76$). The subscales had less than optimal reliability with results as shown in Table 3.

**Relationships Among Knowledge, Experience, Intention, and Demographic Factors**

No statistically significant relationships were found among the demographic variables of age, gender, years in practice, area of NP certification, educational preparation, and practice setting. A statistically significant difference in mean experience scale scores between post–master’s certificate prepared NPs and doctorally prepared NPs was found with post-Tukey HSD measurement. Mean difference between post–master’s certificate preparation and doctorate preparation was found to be statistically significant ($p = .039$).

The relationship between practice setting, knowledge, experience, and intention was investigated. Post-Tukey HSD measures revealed a statistically significant difference in mean experience scale scores between NPs who practice in episodic urgent care and those who practice in specialty practice settings. Post-hoc Tukey HSD tests were measured to further investigate this significant difference. The mean difference between episodic urgent care settings and specialty practice was found to be statistically significant ($p = .008$).

**Table 3.** Number of items and Cronbach’s alphas for health literacy strategies behavioral intention ($N =$ listwise 433 valid cases)

|                      | $n$ | $\alpha$ |
|----------------------|-----|----------|
| Intention subscale   | 14  | .76      |
| Attitude             | 4   | .76      |
| Subjective norms     | 4   | .37      |
| Perceived behavioral control | 5   | .53      |
| Intention            | 1   | Not applicable |
Discussion
The findings reported in this study reveal a sample of NPs who had some knowledge of health literacy, used few health literacy strategies in practice, but had a strong intention to use health literacy strategies in future practice. The instruments available to measure the areas of knowledge, experience and intention were not used in the nurse practitioner population before this study and were found to have a decreased measure of reported reliability. The following sections explore findings in the areas of knowledge, experience, and intention.

Knowledge
Participants answered affirmatively when asked whether health literacy screening would help improve patient teaching. However, questions about specific screening tools were answered incorrectly more than half the time. Although they were not aware of screening tools, nurse practitioner participants answered correctly on how to identify low health literacy patient behaviors most of the time. Ultimately, the knowledge of how low health literacy presents in behaviors may be more useful than knowledge of screening tools in everyday practice.

The questions in the content area of guidelines for written materials were answered correctly by NPs greater than two thirds of the time. The two questions answered incorrectly were in regard to the Fry method and actively engaging patient learning. In this investigation, the Fry method of evaluating written material was not familiar to many NPs. Given that most preprinted written patient educational material is above the recommended fifth-grade reading level (Wilson, 2009), this is an area in which nurse practitioners can make a difference once they know how to evaluate these materials.

A gap in NP knowledge was also noted with regard to actively engaging the patient in learning. Active engagement for patients is a foundational concept for nurse practitioners teaching patients (Innott & Kennedy, 2011). Although nurse practitioners teach patients on a daily basis, many may not have had education on the principles of adult learning styles. Although health literacy and patient education are now being addressed in some NP degree programs, this may not be the case for all programs (Weil, 2006). In addition, those NPs who have been out of school and in practice for even a few years may not have access to continuing education in the realm of education and learning styles.

Evaluation of health literacy interventions was a content area where participants answered both questions correctly two thirds of the time or more. The question on the Teach-Back strategy was answered correctly by most of the NPs. Overall knowledge of health literacy and health literacy strategies was explored as a background factor that could influence beliefs about this behavior. The results of the study point to a low level of knowledge in nurse practitioners regarding certain key areas.

Experience
The first question in the Health Literacy Knowledge and Experience Survey (HLKES), Part II seeks information on how often health literacy was emphasized in the nurse practitioners’ curriculum. Of the nurse practitioner participants who answered the question, almost half responded “never” or “sometimes.” This finding is important to educators as they plan for curriculum content in NP programs.
Regarding use of health literacy strategies with patients, most of the NPs described written patient education materials as being used “frequently” or “always.” Almost half of the participants stated that they ensured the cultural appropriateness of health care materials “frequently” or “always.” The attention to a patient’s culture is not surprising. Over the past decade, accrediting agencies such as the Joint Commission have placed much emphasis on the provision of culturally and linguistically appropriate care (The Joint Commission, 2010; U.S. Department of Health and Human Services Office of Minority Health, 2001). What has not yet been emphasized by accrediting agencies is appropriateness in regard to health literacy. Despite the frequent use of written materials, more than one third of NP participants responded that they “never” or “sometimes” evaluated reading levels of these materials. Most participants were unfamiliar with the Fry evaluation tool for reading level of written materials when asked about it in the HLKES, Part I.

The use of other materials or modalities for patient education was investigated using the HLKES, Part II. Audiotapes, videotapes, and computer software had rare to no usage by the participants. The reason why nurse practitioner participants did not use other formats for patient education was not explored in this investigation. However, the reliance on text for patient education does not bode well for patients with low health literacy. Preprinted health information has been reported to be at a high school reading level in most instances (Wilson, 2009). If the participants are developing their own written materials, the results from this investigation suggest that they are not evaluating reading level, nor are they aware of how to do this important task.

Intention

This researcher found the intention to use health literacy strategies in clinical practice with patients to be high among the participants, as measured by the Health Literacy Strategies Behavioral Intention (HLSBI) questionnaire. When evaluating mean scores according to subscale, the scores again were high. The participants had a mean score on the attitude subscale of 6.27 on a Likert scale of 1 to 7. This score points to a positive attitude toward the behavior of using health literacy strategies. The reasons for the highly favorable attitude toward health literacy warrant further investigation. The recent increase of literature regarding the consequences of low health literacy and the emphasis on patient self-management may have influence on the participants’ belief in the value of health literacy strategies in practice.

The subjective norms mean score was noted to 4.62 on a Likert scale of 1 to 7. This was the lowest score of the three subscales. This subscale was also found to have suboptimal reliability based on the Cronbach’s alpha as \( \alpha = .37 \). When evaluating subjective normative beliefs, or subjective norms, Ajzen and Fishbein (2010) divided those beliefs into two categories. Those categories are injunctive and descriptive (Fishbein & Ajzen, 2010).

The injunctive beliefs are those perceptions of what one thinks others say should be done concerning a certain behavior. The descriptive beliefs are those perceptions of what others are actually doing. During instrument development, there were two distinct parties identified by the elicitation group as influencing injunctive beliefs: patients and other nurse practitioners. Given the homogeneity of the elicitation group (all NPs from New York State) and the geographic diversity of the sample population, the perceived subjective norms may have been different. This would have affected response to the subjective norms items.
The mean score for the perceived behavioral control subscale was found to be 5.48 on the Likert scale of 1 to 7. This finding suggests that the participants feel they have control over the behavior of using health literacy strategies in practice. Nurse practitioners function at a relatively high level of autonomy in clinical practice compared to registered nurses. It would seem logical that the perception of behavioral control for this sample would be high. The construct of perceived behavioral control includes both “self-efficacy (the ease or difficulty of performing the behavior) as well as controllability (the extent to which the performance is up to the actor)” (Ajzen, 2002, p. 680).

In this group of autonomous practitioners, the score on the perceived behavioral control was high, reflecting their ability and control over their own practice, but not the external factors of the practice setting such as resources and time. The perceived behavioral control subscale was found to have suboptimal reliability based on the Cronbach's alpha reported as $\alpha = .53$. Of interest is Ajzen's (n.d.) contention that “internal consistency is not a requirement of the behavioral, normative, and control belief composites because different accessible beliefs may well be inconsistent with each other.” Last, the intention subscale, one question, was answered by participants with a mean score of 5.12 out of 1 to 7 Likert scale. This suggests that participants intend to use health literacy strategies in their practice.

**Limitations of Study**

The following limitations are identified in this study. A convenience sample was used. Results may not be generalizable to the entire nurse practitioner population. All instruments were used for the first time with a NP sample. The reported reliability for the HLKES Part I and Part II were found to be less than optimal for use with this population. Although the HLSBI was found to have an adequate level of internal consistency ($\alpha = .76$), two of the subscales had suboptimal internal consistency. These limitations provide opportunity for future instrument development.

**Conclusions and Future Research Recommendations**

The findings of this investigation have implications for nursing and for the health care system. The U. S. health care system is complex. Patients are expected to do more for themselves and caregivers are given responsibility beyond what might have been expected in the past. NPs are expected to provide education to these patients and families in a culturally congruent, age-appropriate manner (The Joint Commission, 2010). Improving NPs' knowledge of health literacy and health literacy strategies can improve patient education and, ultimately, patient outcomes. Nursing education and nursing administration can work in tandem to reach this goal.

Learning about health literacy and health literacy strategies in the classroom and demonstrating competency in patient education will begin to increase NP knowledge and experience. There will still be the challenge of incorporating the use of health literacy strategies into everyday practice. This investigation found that nurse practitioners working in specialty practices had higher mean experience scores than those working in episodic urgent care settings. The reason for this difference is an opportunity for future research.

This investigation found a propensity for the use of written materials for patient education across all practice settings. In this age of digital information, nursing
education may need to provide nurse practitioner students opportunities to use other formats for patient education. Nursing administration can look at patient education resources beyond the written word and provide these resources to nurse practitioners in the outpatient setting. The establishment of a health literacy champion would be one way to begin the work of standardizing patient education materials. The Agency for Healthcare Quality and Research Universal Precautions Toolkit (Dewalt et al., 2011) has many concrete examples of small steps that can be taken in an individual practice to improve the care of low health literacy patients. When looking at the health care system as a whole, standardization of patient education materials in all settings would be a worthy goal.

Intention to use health literacy strategies in the outpatient practice setting was positive in this sample. According to the theory of planned behavior, “intention is the best single predictor of behavior” (Fishbein & Ajzen, 2010, p. 21). However, the authors say that skills, abilities, and environmental constraints also affect action. NPs in practice need support from nursing education and administration to fulfill their intention to provide the best care possible to low health literate patients.

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