

Predictors of Nurses' Intention and Behavior in Using Health Literacy Strategies in Patient Education Based on the Theory of Planned Behavior

Gholamreza Sharifirad¹, Firoozeh Mostafavi², Mahnouch Reisi², Behzad Mahaki³, Homamodin Javadzade², Akbar Babaei Heydarabadi⁴, Mahmoud Nasr Esfahani⁵

¹Department of Public Health, Qom University of Medical Sciences, Qom, Iran

²Department of Health Education and Health Promotion, Isfahan University of Medical Sciences, Isfahan, Iran

³Department of Bio-Statistics and Epidemiology, Isfahan University of Medical Sciences, Isfahan, Iran

⁴Public Health Department, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

⁵Department of Patient Health Education, Al-Zahra Educational Hospital, Isfahan University of Medical Sciences, Isfahan, Iran

Corresponding author: Homamodin Javadzade. Department of Health Education and Health Promotion, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: homam_j@hotmail.com

ABSTRACT

Background: Health literacy is one of the most important priorities for improving health care quality through enhancing patient-provider communication. Implementing health literacy strategies enable nurses to provide information and instructions for patients in a manner that is more commensurate and understandable. The purpose of this study was to investigate the factors affecting nurses' intention to implement health literacy strategies in patient education based on theory of planned behavior. **Methods:** A cross-sectional study was done on 148 nurse practitioners of AL-Zahra educational hospital in Isfahan, Iran, using a descriptive-analytic method. Data collected via a standardized questionnaire based on theory of planned behavior constructed and analyzed by SPSS v.17 using ANOVA, Independent T-test, Pearson correlation and linear regression. **Results:** There was statistically significant correlation between using health literacy strategies and marriage status, attending in retraining courses, employment type, job history, and job status. Perceived behavioral control was the most powerful predictor of intention ($\beta=0.417$) and use health literacy strategies in patient education and behavior of nurses ($\beta=0.33$). **Conclusion:** According to the findings of this study, perceived behavioral control is a powerful determinant of nurses' intention and behavior of using health literacy strategies in patient education. Hence we recommend nurse educators to pay special attention to the constructs of this theory mainly perceived behavioral control in retrain courses about patient education and health literacy strategies.

Key words: Health Literacy Strategies, Nurse Practitioners, Theory of Planned Behavior,

1. INTRODUCTION

Communication is one of the most important skills for healthcare professionals and service providers in the healthcare system (1). Although these people tend to establish a clear communication with patients to provide information and education to them, in the process of communication with patients, they usually use specialized terms and jargons, which are familiar to them and are deemed as more accurate. Sometimes, they do not know the non-professional equivalent of the terms. In addition, in communicating with patients, eventually they convey so much information that patients cannot process. Therefore, the majority of patients, even those with strong language skills and good speaking and communication ability, encounter dif-

iculties in processing information, because most of them are unfamiliar with medical terminology and had difficulty in focusing on the information provided. They often find it hard to understand the information and training offered by health professionals(1-4). According to studies; patients remember only 50 percent or less of what health specialists teach them (3). Poor communication between patients and health care providers leads to frequent problems in the healthcare system such as inability to remember next doctor's visit time, poor self-care, misuse of drugs, delayed access to needed medical care, hospital re-admissions and the like(5). According to the literature, a significant proportion of patients facing these problems are people with limited health literacy. In fact, the concept

of limited health literacy describes patients who don't have enough skills and abilities to acquire, interpret and understand health-related information needed for proper decision making and functioning in the health care system (6, 7) and therefore, requires information and training provided in a different way than is done for others (8).

In general, health literacy includes knowledge, motivation and ability to obtain, understand, evaluate and implement health information in order to judge and make decisions about health care routines, disease prevention and health promotion, which finally affects maintaining and improving quality of life. It is becoming increasingly important in healthcare systems and is related to people's capabilities for satisfying complex health needs in modern societies. Poor health literacy negatively affects the communication between health professionals and patients and is rapidly becoming a problem in the healthcare system (9). Patients with low health literacy often use passive methods of communication, do not participate in partnership decision-making, and, as a result, face several problems in their interaction with therapists (10-13). Effective communication is the foundation of patient-centered health care and health literacy is a key component for effective communication between patients and health professionals (14) and is thus one of the most important priorities for improving health care system (15, 16). In fact, establishing effective communication between health professionals and patients increases the system's efficacy and patients' satisfaction in the service provided in health centers. It improves patient satisfaction as one of the main indicators of quality of health care, which will result in positive health outcomes (17-19).

Health literacy is considered by Healthy people 2020 as one of the main priorities for improving the quality of health services, and one of the goals related to health literacy in this project is that of improving the communication between patients and health care providers (20). In this regard, Joint Commission and the World Health Organization also stressed the need to provide information and training in a standard and patient-centered approach to people with inadequate health literacy (18). In this regard, Sudore and Schillinger (2009) in a study titled interventions to Improve Care for Patients with Limited Health Literacy, introduce best health literacy practices that benefit all patients, especially those with insufficient health literacy. According to these researchers, health literacy strategies include the use of simple and understandable language, limiting the number of points provided in each visit, using multiple modalities, including pictures, encouraging patients to ask questions and finally using simple and understandable media (21). In general, if health professionals become familiar with the concept of health literacy strategies, when training patients, they offer materials using language and methods that help patients better understand and achieve a greater ability implement the expert advice (22).

Since health literacy is a multi-faceted issue, which affects almost every aspect of health care (23) Therefore, all those who have to communicate with patients, their families and other people in clinical environments, in writing or verbally, must have necessary skills and knowledge in the area of health literacy (14). Nurses, as a group of health care providers who are in the frontline of establishing safe and effective communication with patients and families with different levels of health literacy play a key role in patient education (24-26). Unfortunately, research

suggests that this largest group of health care providers do not have enough knowledge, attitudes and skills in the area of health literacy and responding to patients' needs and most of them do not use effective communication strategies and methods in teaching and communicating with patients (27, 28). Since, according to literature, a variety of factors, including individual, motivational, economic, and organizational factors can affect the performance of health care providers in clinical settings (29), behavioral science theories can provide good information on the factors affecting the behavior of this class of people.

The theory of planned behavior (TPB) as one of the best behavioral science theories has been used in several studies to explain behavior and identify important factors affecting it. In this study, this theory is used as a conceptual research framework, because various studies have shown that it has performed well in predicting the intention and behavior of different groups of healthcare providers (30, 31). TPB is based on the premise that people are reasonable and evaluate consequences before engaging in certain actions (32). Based on the theory, behavioral intention, which is shaped by attitude toward behavior, subjective norms, and perceived behavioral control, can predict behavior. Attitude toward behavior is one's positive or negative evaluation of self-performance of the particular behavior. Subjective norm is one's perception about the particular behavior as influenced by social pressures and can lead to doing or abandoning the behavior. Perceived behavioral control is one's perceived ease or difficulty of performing the particular behavior. The theory has done well in various studies in predicting the behavior of different groups of healthcare providers, including nurses (33).

Research has been conducted at the Alzahra educational hospital which is one of the largest such facilities in Iran. It has 950 beds and more than 2600 personnel, and about 970 of them are nurse practitioners. The majority of this hospital's patients are from Isfahan and surrounding provinces, which have a variety in ethnicity and races. Because of the inexpensive services of educational hospitals and the geographical situation, a large number of patients who referred to this hospital are from low socioeconomic levels, low educated and many of them had difficulties in talking in Persian language and low health literate (34, 35). Communicating with such in danger of low health literacy patients requires its knowledge and techniques. Having this in mind, the present study aims to predict factors influencing the nurses' behaviors regarding use of health literacy strategies when communicating and educating low health literacy patients based on TPB.

2. MATERIALS AND METHODS

This is a descriptive-analytical cross-sectional study carried out in 2014 on 148 nurses working in Al-Zahra hospital in Isfahan, Iran. The sample was selected through simple random sampling from among the nurses of the hospital.

Criteria for inclusion in the nurse group were having at least a bachelor's degree in nursing and consent to participate in the study. The sample size was determined based on standard deviation taken from a pilot study by researchers on 30 nurses ($\sigma = 0.64$). At the significance level of 0.95 and accuracy of 0.05, the sample size was estimated as 148 using the formula ($n = z^2 \sigma^2 / d^2$). Research subjects were informed about the purpose of the project and privacy and were ensured that the project would not affect their evaluation. Those who consented were included in the

study. For data collection, a questionnaire consisting of two parts was used. The first part was about demographic characteristics of the participants and included items on age, gender, marital status, level of education, type of employment, experience, organizational position and the ward where they were working. The second part of the questionnaire consisted of items based on TPB and was administered to determine predictors of nurses' intention and behavior regarding the use of health literacy strategies. The questionnaire consisted of 11 questions on attitude towards behavior, 9 question on subjective norms, 7 questions on perceived behavioral control and 6 questions on behavioral intention rated based on five-point Likert scale anchored at 1 = completely agree and 5 = completely disagree. The use of health literacy strategies in patient education was assessed by 10 items. To investigate the validity of the developed questionnaire, the face and content validity were assessed using a qualitative approach based on comments of a panel of experts and a quantitative approach via comparing the content validity ratio (CVR). According to Lawsche table, values of CVR for 10 experts above 0.62 were considered as necessary items in the instrument(36). The calculated CVR value for each of the constructs was above the acceptable level, and the mean ratio for the whole instrument was 0.85 indicating the content validity of the questionnaire. To determine the reliability of the instrument, internal consistency method was used. To this end, the questionnaire was completed by 30 participants and Cronbach's alpha was used to assess the internal consistency. The alpha value was 0.74 for the attitude scale, 0.78 for subjective norms, 0.68 for perceived behavioral control and 0.81 for behavioral intention. These alpha values approved the internal consistency of the instrument. Data were analyzed using independent t-test, ANOVA, Pearson's correlation coefficient and linear regression via SPSS v.17.

3. RESULTS

A total of 148 nurses working in Al-Zahra hospital with a mean age of 36.75 ± 5.78 participated in the study. The minimum and maximum age was 24 and 49 years respectively. 89 percent of participants were female, 80 percent were married, 64.8 percent had completed patient education retraining courses in last year, 37.8 percent of them were contract employees, 87.9 percent was working in the wards and about 12 percent worked as a supervisor. 33.8 percent of participants had from 5 to 10 years of experience. The mean score of nurses on use of health literacy strategies for patient education was 21.74±3.47. One-way ANOVA showed a significant difference between the mean scores of nurses on use of health literacy strategies for patient education on the basis of variables such as marital status (p=0.023), attending retraining courses (p=0.003), type of employment (p=0.02), work experience (p=0.004), and organizational position (p=0.003)., In other words, single nurses with 5 to 10 years of work experience and those with contract employment and attending retraining courses on patient education used more health literacy strategies and techniques for patient education than others did.

Results of Pearson's correlation coefficient show that there is a significant positive correlation between construct of attitude toward behavior, subjective norms, and perceived behavioral control with intent and behavior of nurses regarding use of health literacy strategies for patient education (Table 1).

Construct	Attitude	Subjective norms	Perceived behavioral control	Intention
Subjective norms	r=0.411 p<0.001			
Perceived behavioral control	r=0.335 P=0.001	r=0.544 P=0.001		
Intention to use health literacy strategies in Patient Education	r=0.234 P=0.004	r=0.336 p<0.001	r=0.483 p<0.001	
Behavior (Using health literacy strategies in Patient Education)	r=0.271 P=0.001	r=0.324 p<0.001	r=0.5 P=0.001	r=0.458 p<0.001

Table 1. Correlation coefficient between constructs of TPB and implementation of health literacy strategies for patient education

Based on the results of linear regression analysis, perceived behavioral control ($\beta=0.417$) was the best predictor of intention (Table 2). The results of the regression model showed that ability of TPB constructs to predict nurses' use of health literacy strategies in patient education is 0.31. Perceived behavior control was the strongest predictor of behavior and predicted 33% of the behavior change (Table 3).

Variable	Standard β	β	standard error	t	R2=
Attitude	0.059	0.029	0.039	0.732	0.244
Subjective norms	0.085	0.068	0.072	0.945	
Perceived behavioral control	0.417	0.356	0.075	*4.776	

Table 2. Linear regression analysis of effects of TPB constructs on intention to use health literacy strategies in patient education (dependent variable) *P < 0.01

Variable	Standard β	β	Standard error	t	R2=
Attitude	0.09	0.067	0.057	1.1777	0.319
Subjective norms	0.016	0.02	0.106	0.186	
Perceived behavioral control	0.33	0.432	0.117	3.686**	
Intention	3.429	0.122	0.418	0.272*	

Table 3. Linear regression analysis of effects of TPB constructs on behavior of using health literacy strategies in patient education (dependent variable) **P < 0.001*P < 0.01

4. DISCUSSION

The purpose of this study is to determine the predictors of nurses' intention and behavior regarding use of health literacy strategies and techniques in patient education based on TPB. According to literature, TPB is one of the best theories that explain the behavior of service providers in the healthcare system and can work well in identifying factors affecting the behavior of practitioners in clinical settings (30). In this study, variables affecting nurses' intention and behavior for use of these techniques based on TPB were identified and analyzed via regression model. Identifying and focusing on modifiable factors in nurses' behavior is an important step in the selection of appropriate intervention to obtain the best results. It is worth mentioning that this study is the first of its kind on assessing the use of health literacy strategies in patient education by Iranian nurses. Therefore, similar studies that can be compared with the results of the present study were not at hand. Hence, in this section we reviewed the studies that examined the intention and

behavior of nurses in similar issues. Based on the results, nurses' uses of health literacy strategies were associated with some of their individual characteristics. Single nurses with 5 to 10 years of work experience and those with contract employment and attending retraining courses on patient education used more health literacy strategies and techniques for patient education than others did. Results confirm the fact that patient education retraining courses and nurses' familiarity with communication skills enhance the effectiveness of the training they provide to patients (37). Unlike results of this study, Caferio claimed that there is not any statistically significant relationship between demographics, intention and experience of using health literacy strategies among nurse practitioners (38). Since service providers in clinical environments consider using health literacy techniques in patient education a time-consuming task, it appears that single nurses, who have fewer personal responsibilities and more time, use these techniques in patient education more than others do.

In the present study, the constructs of attitude, subjective norms and perceived behavioral control were associated with nurses' intention and behavior of using health literacy skills in patient education. In this study, perceived behavioral control was the first and strongest construct associated with intention and behavior. This construct predicted 23 percent of the variance in intention and more than 45% of the variation in behavior. In fact, if nurses perceive the use of these strategies as easy and under their control, they will have a strongest intention to use these strategies in patient education, and eventually they will do so. In addition, they can cope more easily with potential problems during treatment. According to Millstein et al., health professionals with higher perceived behavioral control performed better in training adults in the field of sexually transmitted diseases (39). Nai-Ying et al found perceived behavioral control to be the strongest predictor of nurses' intention and volunteering to care for SARS patients (29). In Bunce and Birdi, perceived behavioral control predicted the behavior of physicians regarding doctors' intentions to request hospital autopsies as a function of job control (40). Unlike results of this study, Renfro et al found positive attitude toward behavior and subjective norms the best predictors of nurses' intention and behavior regarding documentation. Based on their study, these two components predicted 46.1 percent of variance in nurses' behavioral intention and 15.1 percent of the variance in their behavior (41).

Limitations: Although the efficacy of the TPB to predict major factors affecting nurses' behavior is well established in clinical settings, since behavior is a complex phenomenon, it is likely that other factors not included in TPB affect their use of health literacy strategies. Although the participants were chosen only from Al-Zahra hospital, which is one of the largest hospitals in Isfahan, the results are not generalizable to other clinical settings.

5. CONCLUSION

Whereas, in this study, attitude towards behavior and subjective norms did not predict nurses' intention to use health literacy techniques in patient education. It can be argued that the nurses' attitude towards the use of health literacy strategies in patient education was positive. Therefore, nurses' control beliefs and perceived ability to do the behavior and overcome

obstacles can lead them towards using health literacy strategies to increase the effectiveness of patient education. This is called perceived behavioral control, which deserves more attention. Since the construct of perceived behavioral control was found to be the most important factor affecting nurses' intention and behavior of using health literacy strategies, designing and implementing programs and educational interventions based on TPB with a focus on perceived behavioral control can increase nurses' participation to provide patient education based on health literacy strategies.

Acknowledgements

The researchers appreciate the Education Deputy of Isfahan University of Medical Sciences for their financial support and the nurses working at Al-Zahra hospital for their participation in completing the questionnaires and providing data necessary to carry out this study.

CONFLICT OF INTEREST: NONE DECLARED

REFERENCES

- Houts PS, Doak CC, Doak LG, Loscalzo MJ. The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient education and counseling*. 2006; 61(2): 173-190.
- Roter DL, Hall JA. Studies of doctor-patient interaction. *Annual review of public health*. 1989; 10(1): 163-180.
- Ong LM, De Haes JC, Hoos AM, Lammes FB. Doctor-patient communication: a review of the literature. *Social science & medicine*. 1995; 40(7): 903-918.
- Mayeaux Jr E, Murphy P, Arnold C, Davis T, Jackson R, Sentell T. Improving patient education for patients with low literacy skills. *American family physician*. 1996; 53(1): 205-211.
- Kutner M, Greenburg E, Jin Y, Paulsen C. *The Health Literacy of America's Adults: Results from the 2003 National Assessment of Adult Literacy*. NCES 2006-483. National Center for Education Statistics. 2006.
- Selden C, Zorn M, Ratzan S, Parker R. *Current bibliographies in medicine: health literacy*. Bethesda, Md. National Library of Medicine. 2000.
- Parker RM, Williams MV, Weiss BD, Baker DW, Davis TC, Doak CC, et al. Health literacy-Report of the Council on Scientific Affairs. *Jama-Journal of the American Medical Association*. 1999; 281(6): 552-557.
- Chiovetti A. Bridging the gap between health literacy and patient education for people with multiple sclerosis. *Journal of Neuroscience Nursing*. 2006; 38(5): 374.
- Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: a systematic review and integration of definitions and models. *BMC Public Health*. 2012; 12(1): 80.
- Schillinger D, Bindman A, Wang F, Stewart A, Piette J. Functional health literacy and the quality of physician-patient communication among diabetes patients. *Patient education and counseling*. 2004; 52(3): 315-323.
- Mancuso CA, Rincon M. Asthma patients' assessments of health care and medical decision making: the role of health literacy. *Journal of Asthma*. 2006; 43(1): 41-44.
- Javadzade SH, Sharifirad G, Radjati F, Mostafavi F, Reisi M, Hasanzade A. Relationship between health literacy, health status, and healthy behaviors among older adults in Isfahan, Iran. *Journal of education and health promotion*. 2012; 1.

13. Reisi M, Javadzade SH, Heydarabadi AB, Mostafavi F, Tavasoli E, Sharifirad G. The relationship between functional health literacy and health promoting behaviors among older adults. *Journal of Education and Health Promotion*. 2014; 3: 119.
14. Coleman C. Teaching health care professionals about health literacy: A review of the literature. *Nursing Outlook*. 2011; 59(2): 70-78.
15. Corrigan JM, Adams K. *Priority Areas for National Action: Transforming Health Care Quality*: National Academies Press, 2003.
16. Parker RM, Ratzan SC, Lurie N. Health literacy: a policy challenge for advancing high-quality health care. *Health affairs*. 2003; 22(4): 147-153.
17. Street Jr RL, Makoul G, Arora NK, Epstein RM. How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient education and counseling*. 2009; 74(3): 295-301.
18. Commission J. *What did the doctor say? Improving health literacy to protect patient safety*: Joint Commission on Accreditation of Healthcare Organizations, 2007.
19. Nutbeam D. The evolving concept of health literacy. *Social science & medicine*. 2008; 67(12): 2072-2078.
20. Health UDo, Services H, Prevention OoD, Promotion H. *Healthy People 2020*. Washington, DC. 2012.
21. Sudore RL, Schillinger D. Interventions to improve care for patients with limited health literacy. *Journal of clinical outcomes management: JCOM*. 2009; 16(1): 20.
22. Coleman C, Kurtz-Rossi S, McKinney J, Pleasant A, Rootman I, Shohet L. *The Calgary charter on health literacy: Rationale and core principles for the development of health literacy curricula*. The Center for Literacy of Quebec. 2008.
23. Speros C. Health literacy: concept analysis. *Journal of advanced nursing*. 2005; 50(6): 633-640.
24. Newens AJ, McColl E, Bond S, Priest JF. Patients' and nurses' knowledge of cardiac-related symptoms and cardiac misconceptions. *Heart & Lung: The Journal of Acute and Critical Care*. 1996; 25(3): 190-199.
25. Marcum J, Ridenour M, Shaff G, Hammons M, Taylor M. A study of professional nurses' perceptions of patient education. *Journal of Continuing Education in Nursing*. 2001; 33(3): 112-118.
26. Toloei M, Dehghan Nayeri N, Faghihzadeh S, Sadooghi Asl A. The nurses' motivating factors in relation to patient training. *Hayat*. 2006; 12(2): 43-51.
27. Cormier CM, Kotrlik JW. Health literacy knowledge and experiences of senior baccalaureate nursing students. *The Journal of nursing education*. 2009; 48(5): 237-248.
28. Cannon S, Boswell C. Filling gaps in knowledge: educating nurses to provide appropriate patient materials. *Journal of continuing education in nursing*. 2009; 40(4): 148-149.
29. Kligler B, Gordon A, Stuart M, Sierpina V. Suggested curriculum guidelines on complementary and alternative medicine: recommendations of the Society of Teachers of Family Medicine Group on Alternative Medicine. *Family Medicine-Kansas City*. 2000; 32(1): 30-33.
30. Perkins M, Jensen P, Jaccard J, Gollwitzer P, Oettingen G, Pappadopulos E, et al. Applying theory-driven approaches to understanding and modifying clinicians' behavior: What do we know? *Psychiatric Services*. 2007; 58(3): 342-348.
31. Eccles MP, Hrisos S, Francis J, Kaner EF, Dickinson HO, Beyer F, et al. Do self-reported intentions predict clinicians' behaviour: a systematic review. *Implement Sci*. 2006; 1(1): 28.
32. Ko NY, Feng MC, Chiu DY, Wu MH, Feng JY, Pan SM. Applying theory of planned behavior to predict nurses' intention and volunteering to care for SARS patients in southern Taiwan. *The Kaohsiung journal of medical sciences*. 2004; 20(8): 389-398.
33. Ajzen I. *From intentions to actions: A theory of planned behavior*: Springer, 1985.
34. Moazam E, Gholami F, Tavakol N, Zahedi Far R. Inpatient Health Care Demand and Geographic Elasticity in Isfahan Province Using Geographic Information Systems (GIS). *Health Information Management*. 2014; 10(7): 921-930.
35. Mollakhalili H, Papi A, Zare-Farashbandi F, Sharifirad G, Hasan Zadeh A. A survey on health literacy of inpatient's educational hospitals of Isfahan University of Medical Sciences in 2012. *Journal of Education and Health Promotion*. 2014; 3: 66.
36. Lawshe CH. A quantitative approach to content validity. *Personnel psychology*. 1975; 28(4): 563-575.
37. Bowles N, Mackintosh C, Torn A. Nurses' communication skills: an evaluation of the impact of solution-focused communication training. *Journal of Advanced Nursing*. 2001; 36(3): 347-354.
38. Cafiero M. Nurse practitioners' knowledge, experience, and intention to use health literacy strategies in clinical practice. *Journal of health communication*. 2013; 18(sup1): 70-81.
39. Millstein SG. Utility of the theories of reasoned action and planned behavior for predicting physician behavior: a prospective analysis. *Health Psychology*. 1996; 15(5): 398.
40. Bunce D, Birdi K. The theory of reasoned action and theory of planned behaviour as a function of job control. *British Journal of Health Psychology*. 1998; 3(3): 265-275.
41. Renfro DH, O'Sullivan PS, McGee GW. The relationship of attitude, subjective norm, and behavioral intent to the documentation behavior of nurses. *Research and Theory for Nursing Practice*. 1990; 4(1): 47-60.