



# Health literacy practices of physicians and patient care personnel in a hospital setting

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## ABSTRACT

**Objective:** Health literacy is a serious public health issue, and there are significant barriers to effective health communication among patients, physicians, and patient care personnel. We developed and implemented a hospital-wide health literacy survey to better determine the knowledge and practices of physicians and patient care personnel concerning health literacy in a hospital setting. **Methods:** In this cross-sectional study, we invited physicians and patient care personnel from a pediatric hospital in the Midwest to participate in a health literacy survey. The survey combined open-ended questions and Likert-type items consisting of four domains: communication, decision-making, interpersonal skills, and health literacy knowledge. Quantitative data were analyzed - using SPSS software (descriptive statistics, Cronbach's alpha, and *t*-test). Open-ended responses were analyzed thematically. **Results:** A total of 145 physicians and 891 patient care personnel completed the surveys. The results of Cronbach's alpha, which was used to estimate the internal consistency of the scale, were 0.7 or greater for all domains. Most of the respondents had a general idea of what health literacy means, but only 37% of patient care personnel and 65% of physicians were able to define health literacy adequately. This study revealed several differences in health literacy perceptions between physicians and patient care personnel, but most respondents agreed that there is a need for health literacy training for health care professionals. **Conclusion:** The results of our study revealed insights and suggest that there is an obvious need to dedicate further efforts toward promoting health literacy. Health literacy training for all healthcare professionals is crucial to create health literate healthcare organizations. The findings are also useful for the health literacy group to plan health literacy initiatives and educational programs for healthcare providers to improve communication about health with patient and families.

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## INTRODUCTION

Health literacy has gained momentum within the field of health promotion research and practice as the health system has become more complex, and people are expected to have more responsibility for self-care. There are multiple conceptual dimensions and definitions of health literacy [1], but the most widely used conceptual definition is: Health literacy is

the cognitive and social skills that determine the ability of individuals to gain access, process, and understand basic health information and services needed to make appropriate health decisions for good health [2,3]. Operating under this definition of health literacy a person should have the ability to read and comprehend health-related materials such as prescriptions, appointment slips, medicine labels, and directions for home self-care [4]. Professional healthcare organizations/government

agencies, such as the American Medical Association, the Institute of Medicine, the U.S. Department of Health and Human Services, and World Health Organization have recognized health literacy as a critical component of high-quality healthcare and have taken action to enforce the demands and expectations of health systems. Further, in a continuing effort of Healthy People 2010 [2], Healthy People 2020 is highlighting the importance of improving the health literacy of the population through one of the goals [5], which is to “use health communication strategies and health information technology to improve population health outcomes and health care quality, and to achieve health equity” [6]. This goal is a high priority for Healthy People 2020 since 9 out of 10 Americans struggle with health literacy issues [7]. In addition, The Joint Commission recognized the importance of health literacy in the hospital setting and has listed it as one of their public policy topics [8].

Health literacy is vital for individuals to maintain and manage their health effectively, but most people find medical terms and instructions difficult to understand [9]. Therefore, low health literacy is increasingly recognized as a problem that influences health care quality, and cost since potentially life-threatening or harmful mistakes can happen when patients cannot read or understand the information provided. Patients with low health literacy levels are more likely to suffer from poor health outcomes, non-compliance with treatment, and increased hospitalization [2,6,10,11].

Many factors may contribute to health literacy, but an individual’s general literacy skills are the most vital determinant [12]. The most recent and comprehensive measurement of literacy skills for the U.S. adult population was the 2003 National Assessment of Adult Literacy [13]. Report findings concluded that 30 million U.S. adults fall into the category of below basic (e.g. circle date on doctor’s appointment slip and signing a form), and 63 million fall into the basic category (e.g. give two reasons a person with no symptoms should get tested for cancer based on a clearly written pamphlet) [14]. Nearly 93 million Americans (47% of the country’s population) are at risk for reduced health outcomes due to a lack of comprehension or potential misunderstanding of pertinent health information [14,15]. Most health-related material is written at the 10<sup>th</sup> grade reading level or higher, but most adults read at an eight-grade level, and 20% of the population reads at or below a 5<sup>th</sup> grade level [16]. Those with low literacy skills have difficulty understanding medication instruction, adhering to treatment, navigating the healthcare system (e.g. using health insurance plans appropriately), and actively participating in their healthcare decisions [17].

Low literacy may impair functioning in the healthcare environment by creating potential barriers to effective health communication among patients, physicians, and other healthcare providers [18]. Moreover, health literacy issues can prevent hospitals from being able to adhere to standards and safety goals for their respective patient populations [19]. Given that low literacy is associated with several adverse health outcomes [20-22] and low health literacy is a real issue for many healthcare settings, we decided to look at the health literacy practices/awareness from healthcare providers’ perspectives.

Hence, the purpose of this study was to investigate knowledge and practices of physicians and patient care personnel concerning health literacy in a hospital setting.

## METHODS

This cross-sectional survey study conducted from July to December 2009 in a pediatric hospital in Midwest. The study was reviewed and approved by the Institutional Review Board of Cincinnati Children’s Hospital Medical Center.

### Setting and Participants

This study took place at Cincinnati Children’s Hospital Medical Center, which is the major pediatric hospital for children in the tri-state of southern Ohio, Indiana, and Kentucky. Thus, patients encompass urban, suburban, and rural populations. Estimates of adults at Level 1 literacy (Level 1 literacy skills refer to typically reading below 5<sup>th</sup> grade level) were 29% for the urban tri-state area, 14% for Kentucky, and 16% for adults in Indiana [23-25]. As a large teaching and research institution, the medical center employs a large number of pediatricians, pediatric specialists, and pediatric trainees.

The participants included hospital-wide physicians and patient care personnel such as nursing staff, dietitians, occupational therapists, auxiliary clinical workers, pharmacy staff, and other clinical departments and support personnel.

### Conceptual Framework

In this study, the healthy literacy framework for assessing knowledge, practices and attitudes of physicians and patient care personnel concerning health literacy was organized into the following four domains:

1. Communication consists of spoken, written words, or non-verbal formats that people use to communicate with each other or convey ideas. Misunderstanding can occur at any stage of the communication process. Plain language in health communication minimizes potential misunderstanding and overcoming any barriers to communicate. In a patient encounter, the choice of words used between the patient and healthcare provider greatly influences how well they understand each other [26]. Without clear communication, we cannot expect an individual to adopt healthy behaviors. Clear communication is the basis for every health information exchange [27].
2. Shared decision-making is a collaborative process in which healthcare providers and patients work together to make healthcare decisions, taking into account the best scientific evidence available for appropriate treatments or management options [28,29]. Patients are encouraged to become more involved in the shared decision-making processes since the patient’s informed preferences are crucial to make the best individualized care decisions. Shared decision-making also allows patients and healthcare providers to have discussions about benefits, concerns, and drawbacks of each treatment or chosen intervention.

3. Interpersonal skills include everything from communication and listening skills to attitudes. Since healthcare environments may be uncomfortable, demanding, and stressful for patients, healthcare providers should possess good interpersonal skills (open, communicative and trusting) to build respectful relationship with their diverse group of patients and patient families. Interpersonal skills are also important traits for the exchange of information, thoughts, feelings, beliefs, including conflict resolutions to create more satisfying interactions with the health consumers [30,31].
4. Health literacy knowledge is vital for all healthcare professionals to produce a positive outcome in healthcare. It is used to identify patients with low literacy, and recognize the behaviors or red flags indicating patients that may have limited health literacy. These behaviors may include incomplete or inaccurately completed registration forms, frequently missed appointments, noncompliance with medication regimens [12], “inability to name medications or explain their purpose, lack of follow-through with tests or referrals, and difficulty navigating the physical healthcare environment because of inability to read signs and follow the directions [32].” Healthcare providers should be cognizant of strategies for communicating with low health literate audiences such as using plain language for clear communication, simple visual aids or drawing pictures, and employing the “teach-back” technique to confirm understanding [33].

All the above domains were selected since they are integral parts of health literacy. The research has also shown that effective communication and interpersonal skills are essential elements for improving client satisfaction, compliance, health outcomes and quality healthcare delivery [34-36]. Physicians and patient care personnel who understand health literacy can employ a universal precautions approach to all patients (an inclusive and the ethical approach to patient-provider communication) [37]. The quality of the patient-provider relationship can have a direct effect on diagnosis, treatment and outcome and on getting the patient to take an active role in the decision-making process [36,38].

### Instrument

The survey tools for physicians and patient care personnel were originally developed by the first author of this paper (KOL). In the initial development stage, six physicians (two internal and four external) provided feedback regarding the quality of the questions, and appropriate changes were made. We also examined each item in the survey tools and re-organized the categories based on specific domains mentioned above.

The physician health literacy survey combined 14 demographic questions (11 closed-ended and three open-ended) along with Likert-type scale items from four domains as listed below:

1. Communication (10 statements)
2. Decision-making (10 statements)

3. Interpersonal skills (9 statements)
4. Health literacy knowledge (7 statements)

To measure how often physicians display behaviors in those domain statements, we used the frequency scale assigning a percentage value as below:

- Never or Almost Never (0-10%)
- Seldom (11-30%)
- Sometimes (31-70%)
- Often (71-90%)
- Always or almost always (91-100%)
- N/A

We tried to avoid overlapping intervals by forcing a fixed percentage value in the psychological distance between two adjacent points. Survey participants could skip questions in the survey; there were no mandatory responses required during the survey.

The patient care personnel health literacy survey used the identical items and the same frequency scale for all the statements from the physician health literacy survey.

To increase the evidence for strong content and face validity, both surveys were put online (www.surveymonkey.com) and tested by the health literacy group and two external reviewers who are experts in designing survey tools. Reviewers also examined the study of ecological validity of instruments (e.g. how well these survey instruments actually assess participants’ health literacy knowledge and their practices.) [39,40].

### Data Collection and Analyses

All physicians with access to the hospital’s email system were invited to participate in the survey in July 2009. To increase the response rate, two follow-up reminders were sent after a period of two weeks. Two months later, the patient care personnel survey sent separately following the same cycle. Both surveys were kept open until December 2009. However, out of 450 physician faculty members and 1,516 other patient care personnel (active medical staff), it is unclear how many of those actually opened the email.

Quantitative data were analyzed through the statistical software package SPSS (descriptive statistics, Cronbach’s alpha, and *t*-test). Statistical significance level was set at  $P < 0.05$ . The results of Cronbach’s alpha, which was used to estimate the internal consistency of each domain scale, were 0.7 or greater for all four domains.

Qualitative data (responses for the open-ended questions) were analyzed using thematic content analysis [41]. Themes were identified inductively, such that themes were strongly linked to the data themselves [41,42]. To eliminate biases, dominant themes were identified in the data through open coding, in which two coders analyzed the qualitative data independently and then the results were compared for the inter-coder reliability.

Coding differences were discussed to obtain consensus between the coders. This helped us link and reorganize themes in an attempt to develop a dominant theme structure. This structure evolved into a conceptual framework of the system under study.

## RESULTS

A total of 145 physicians (75.8% full time) and 891 patient care personnel (73.9% full time) completed the surveys (response rate: Physicians 32% and patient care personnel 59%). Table 1 shows the demographics of survey respondents.

The respondents of the physician group consisted of pediatricians (73%), anesthesiologist (7%), fellows (6%), psychiatrists (6%), dentists (3%), residents (2%), researchers (2%) and radiologists (1%). As for the patient care personnel, 64% of the respondents were nurses, and the rest of them (36%) were dietitians, therapists, child life, audiologists, social workers, psychologist, administration personnel, managers and assistants.

### Definition of Health Literacy

Most of the respondents had a general idea of what health literacy means, but only 37% of patient care personnel and 65% of physicians were able to define health literacy adequately. Physicians, whose definitions seemed most complete, indicated that health literacy involved the understanding and ability to use medical/health information and therapies appropriately.

Using the simple definition, “*Health literacy is an individual’s ability to read, understand and use healthcare information to make decisions and follow instructions for treatment,*” the respondents’ definitions could be sorted into those that gave a thorough definition (65%), those that gave a partial definition that reflected some understanding (physicians 30%; patient care personnel 53%), and those that gave a definition that was not appropriate or missed the mark (68 physicians skipped this answer and 5% of physicians did not give an answer other than “Not Applicable”). The majority of partial answers appeared

to leave out “use healthcare information to make and follow instructions for treatment.” Of the “Not Applicable,” some indicated not being sure, and some indicated that health literacy is some sort of inability or misunderstanding and was defined solely negatively.

For the purpose of ranking, we asked the participants to rank the five factors we listed in ascending order (age, income, employment status, education level, race/ethnicity). Both physicians and patient care personnel ranked “education level” as the most predictive factor for a person’s general literacy and “race/ethnicity” was selected as the least predictive factor. While both groups listed “employment status” as number three, they did not agree with each other on the order of the second category (physicians listed “income” where patient care personnel listed “age” as a second factor).

### Four Domains of Health Literacy

We compared physicians and patient care personnel for their responses on the individual items of each domain of the survey.

#### Communication

The survey results showed that both physicians and patient care personnel routinely explained the child’s medical condition using understandable terms, avoiding medical jargon. However, there was disagreement between these two groups regarding the frequency of the use of medical terms when they were in a rush. As presented in Table 2, the physicians used medical jargon more frequently compared to patient care personnel when they were in a rush. Physicians and patient care personnel also significantly differed in other dimensions of communication. For instance, physicians were more likely to ask their patients about their main concerns. However, physicians were less likely than patient care personnel to use different methods of communication, such as written, audio, and visual materials, when explaining the patients’ health condition to the patients/families and when asking them about their health-related main concerns. In addition, physicians were less likely to use interpretive and translational services when they interact with patients/families. The cultural differences within the patient population were not highly recognized. However, both groups were in agreement with the importance of allowing extra time for the patient/family to ask questions during their visit, setting achievable goals for the patient’s next visit, and consolidating the most relevant medical information into a simple, easy to understand “take home message” for the patient/family.

Only 18% of physicians and 16% of patient care personnel attended communication skills training and/or sessions related to health literacy such as college courses, grand rounds presentations, training programs, in-services, workshops, and conferences. The vast majority of respondents indicated that there is a need for health literacy training for healthcare professionals (91% of physicians and 94% of patient care personnel).

**Table 1: Demographic of respondents**

| Characteristics  | Physicians<br>(n=145) (%) | Patient care personnel<br>(n=891) (%) |
|------------------|---------------------------|---------------------------------------|
| Gender           |                           |                                       |
| Male             | 50                        | 7.8                                   |
| Female           | 50                        | 92.2                                  |
| Age range        |                           |                                       |
| 18-24            | 0                         | 7.3                                   |
| 25-34            | 39.5                      | 24.9                                  |
| 35-44            | 26.9                      | 21.2                                  |
| 45-54            | 20.2                      | 30.9                                  |
| 55-64            | 11.8                      | 14.7                                  |
| 65+              | 1.7                       | 1.0                                   |
| Ethnicity        |                           |                                       |
| African-American | 1.8                       | 7.8                                   |
| Native American  | 1.1                       | 1.1                                   |
| Asian            | 7                         | 1.3                                   |
| Caucasian        | 84.2                      | 88.6                                  |
| Hispanic         | 6.1                       | 1.4                                   |
| Other            | 4.4                       | 0.99                                  |

Shared decision-making

The results showed that there were significant differences in the responses of the physicians and patient care personnel regarding shared decision-making. Table 3 suggests that physicians' performance on certain dimensions of the shared decision-making domain is significantly lower than the patient care personnel's performance. These dimensions were as listed below:

- Allowing enough time to hear patient's/family's questions and opinions

- Making an effort to answer questions without judgment
- Asking the patient/family questions to find out their current self-management plan
- Discussing the appropriate self-management plan with the patient/family and identifying discrepancies
- Making sure that the patient/family understands the healthcare providers' instructions
- Prioritizing the needs, resources and treatment needs of patients/families
- Providing patients/families with pamphlets, books, specific trusted websites, etc. to assist them in decision making

**Table 2: Communication domain**

| Communication  | Respondent   | n   | Mean | SD    | t-value |
|--|--------------|-----|------|-------|---------|
| When I am in a hurry, I hide that from the patient/family  | Physician    | 141 | 3.55 | 1.210 | 0.369   |
|  | Patient care | 793 | 3.51 | 1.515 |         |
| I ask the patient/family about their main concerns   | Physician    | 142 | 4.77 | 0.486 | 2.946*  |
|  | Patient care | 777 | 4.63 | 0.718 |         |
| I work with the patient/family to set achievable goals for the next visit  | Physician    | 122 | 4.23 | 0.758 | -0.006  |
|  | Patient care | 613 | 4.23 | 0.974 |         |
| I allow extra time to let the patient/family ask questions during the visit  | Physician    | 138 | 4.54 | 0.695 | -1.708  |
|  | Patient care | 748 | 4.65 | 0.650 |         |
| I explain the child's medical condition using understandable terms, avoiding medical jargon                                      | Physician    | 141 | 4.67 | 0.500 | 0.499   |
|  | Patient care | 681 | 4.65 | 0.681 |         |
| I consolidate the most relevant medical information into a simple, easy to understand "take home message" for the patient/family | Physician    | 141 | 4.39 | 0.684 | -1.943  |
|  | Patient care | 695 | 4.53 | 0.775 |         |
| I am not sensitive enough to the cultural differences within my patient population   | Physician    | 139 | 2.23 | 0.919 | 1.144   |
|  | Patient care | 795 | 2.13 | 1.214 |         |
| I use different methods of communication to help patient/families understand, such as written, audio, visual, etc                | Physician    | 142 | 3.59 | 1.039 | -4.38*  |
|  | Patient care | 755 | 4.01 | 1.019 |         |
| I make use of interpretive and translational services for patient/families   | Physician    | 139 | 4.23 | 0.973 | -2.04*  |
|  | Patient care | 744 | 4.41 | 0.941 |         |
| I use medical terms that my patient may not understand, especially when I am in a rush   | Physician    | 143 | 2.01 | 0.800 | 2.44*   |
|  | Patient care | 749 | 1.82 | 0.936 |         |

\*To compare physicians and patient care data, two samples t-test analyses were employed. The assumptions of two sample t-test such as normality and equal variance were also met. As Table 2 suggests, each group's (physicians or patient care) standard deviation value is substantially lower (at least half times) than its corresponding mean value, which suggests that normality assumption is met by the data. In addition, for equal variances, "Levene's test for equality of variances" was taken into account. If the assumption of equal variances was violated by the data, alternative t-test statistics were reported as offered by the SPSS outputs, \*P<0.05, SD: Standard deviation

**Table 3: Shared decision making domain**

| Shared decision making   | Respondent   | n   | Mean | SD    | t-value |
|--|--------------|-----|------|-------|---------|
| I allow enough time to hear my patient/family's questions and opinions   | Physician    | 134 | 4.42 | 0.629 | -4.29*  |
|  | Patient care | 736 | 4.67 | 0.573 |         |
| I make an effort to answer questions without judgment  | Physician    | 133 | 4.61 | 0.575 | -2.54*  |
|  | Patient care | 755 | 4.75 | 0.546 |         |
| I ask the patient/family questions to find out what their current self-management plan is                            | Physician    | 123 | 3.93 | 1.006 | -2.34*  |
|  | Patient care | 608 | 4.16 | 0.925 |         |
| I discuss the appropriate self-management plan with the patient/family and identify any discrepancies                | Physician    | 123 | 3.98 | 0.882 | -2.42*  |
|  | Patient care | 586 | 4.19 | 0.903 |         |
| I work with the patient/family to develop an action plan we are both satisfied with                                  | Physician    | 129 | 4.28 | 0.729 | -0.979  |
|  | Patient care | 624 | 4.35 | 0.806 |         |
| I make sure that the patient/family understands my instructions  | Physician    | 132 | 4.37 | 0.714 | -6.131* |
|  | Patient care | 714 | 4.77 | 0.517 |         |
| I form a partnership with the patient/family and use their input to negotiate solutions                              | Physician    | 129 | 4.46 | 0.637 | -0.889  |
|  | Patient care | 660 | 4.52 | 0.682 |         |
| I involve the patient/family in the treatment decisions  | Physician    | 130 | 4.58 | 0.632 | -0.93   |
|  | Patient care | 616 | 4.64 | 0.652 |         |
| I prioritize the needs, resources and treatment needs of patient/families  | Physician    | 127 | 4.39 | 0.618 | -4.94*  |
|  | Patient care | 666 | 4.68 | 0.585 |         |
| I provide patient/families with pamphlets, books, specific trusted websites, etc., to assist them in decision-making | Physician    | 128 | 3.66 | 1.006 | -6.73*  |
|  | Patient care | 659 | 4.27 | 0.923 |         |

\*P<0.05, SD: Standard deviation

### Interpersonal skills

Responses of physicians and patient care personnel differed significantly for six of the nine items in the interpersonal skills domain [Table 4]. The results showed that both physicians and patient care personnel took the concerns of their patients/families seriously, treated them with dignity and respect, and showed them empathy. However, similar to the shared decision-making scale, physicians displayed a lesser commitment to the majority of the items on the interpersonal skills scale. These items/dimensions were as follows:

- Teaching and verifying understanding for patients/families
- Assessing patient/family understanding, including assessing the patient's/family's readiness to change
- Ability to identify low literacy behaviors of patients/families
- Taking time to listen carefully to the health concerns and questions of patients/families
- Responding promptly to patient calls, requests or emails
- Spending time with patients.

### Health literacy knowledge

As presented in Table 5, all the items in the "health literacy knowledge domain" differed significantly between physicians and patient care personnel. Parallel to the shared decision-making and interpersonal skills domain, physicians performed significantly lower on health literacy knowledge compared to patient care personnel. Putting it differently, the results showed that the degree of patient care personnel awareness of health literacy issues within the healthcare setting was significantly higher than that of physicians.

Although patient care personnel perceived that they were able to explain the definition of health literacy, the open-ended question, that asked the definition of health literacy, did not support this claim. As mentioned above, only 37% of patient care personnel were able to provide a thorough definition of health literacy while 65% of physicians were able to define health literacy adequately. However, the frequency of the

patient care personnel's recognition of low literacy behaviors and a patient's/family's protective behaviors and their impact on healthcare delivery were higher than the physicians'. Their awareness of the scope of health literacy issues included using practical strategies to deal with families with low health literacy, including referring them to the health literacy resources available at Cincinnati Children's and in the community. The patient care personnel also claimed that they understood the difference between health literacy and low literacy.

### Evaluating overall domain differences

In this section of the study, we evaluated physicians and patient care personnel on their overall domain scale differences. In this context, as shown in Table 6, the overall responses of physicians and patient care personnel differed significantly for three domains: Decision-making, interpersonal skills, and health literacy knowledge. Similar to a single item comparison results, physicians significantly scored less for the mentioned domains scales compared with patient care personnel.

## DISCUSSION AND CONCLUSION

Our cross-sectional survey study was the most efficient way to identify physicians' and patient care personnel's critical knowledge and practices regarding the overall context of health literacy in a hospital setting. Comparing physicians' responses to the responses of patient care personnel was useful to capture if there were any inconsistencies that existed regarding health literacy knowledge and practices among physicians and health care personnel. As a matter of fact, this study revealed several differences in health literacy perceptions between physicians and patient care personnel. These differences may be related to the educational backgrounds, communication styles, patient-provider relationship, amount of time spent with patients, and the role and responsibilities of each group (physicians vs. health care personnel) [43]. In the context of the patient encounter, physicians focus more on diagnosis and treatment, but patient care personnel have more direct patient contact and tend to advocate more for patients.

**Table 4: Interpersonal skills domain**

| Interpersonal skills   | Respondent   | n   | Mean | SD    | t-value |
|--|--------------|-----|------|-------|---------|
| I use the teach-back method to assess patient/family understanding                           | Physician    | 120 | 2.97 | 1.137 | -7.32*  |
|  | Patient care | 616 | 3.73 | 1.027 |         |
| I assess the patient's/family's readiness to change  | Physician    | 125 | 3.42 | 1.010 | -6.077* |
|  | Patient care | 617 | 4.02 | 0.959 |         |
| I show empathy toward my patients/families   | Physician    | 132 | 4.73 | 0.537 | -1.21   |
|  | Patient care | 732 | 4.80 | 0.525 |         |
| I treat my patients/families with dignity and respect  | Physician    | 131 | 4.92 | 0.278 | -0.495  |
|  | Patient care | 731 | 4.93 | 0.373 |         |
| I am able to identify low literacy behaviors in my patients/families                         | Physician    | 132 | 3.42 | 0.866 | -5.95*  |
|  | Patient care | 727 | 3.92 | 0.882 |         |
| I take time to listen carefully to the health concerns and questions of my patients/families | Physician    | 131 | 4.51 | 0.612 | -3.91*  |
|  | Patient care | 714 | 4.74 | 0.541 |         |
| I respond promptly to patient calls, requests or emails                                      | Physician    | 112 | 4.21 | 0.686 | -7.047* |
|  | Patient care | 655 | 4.65 | 0.600 |         |
| I spend as much time as I would like with patients   | Physician    | 125 | 3.34 | 1.000 | -4.207* |
|  | Patient care | 693 | 3.73 | 0.953 |         |
| I take the concerns of my patients/families seriously  | Physician    | 130 | 4.80 | 0.472 | -1.6    |
|  | Patient care | 724 | 4.87 | 0.451 |         |

\* $P < 0.05$ , SD: Standard deviation,

**Table 5: Health literacy knowledge domain**

| Health literacy knowledge   | Respondent   | n   | Mean | SD    | t-value |
|---|--------------|-----|------|-------|---------|
| I am able to explain the definition of health literacy                                    | Physician    | 130 | 3.58 | 1.119 | -5.074* |
|   | Patient care | 699 | 4.12 | 0.963 |         |
| I am aware of the scope of health literacy issues and their impact on healthcare delivery | Physician    | 130 | 3.55 | 1.065 | -4.94*  |
|   | Patient care | 716 | 4.04 | 0.991 |         |
| I am familiar with practical strategies to deal with families with low health literacy    | Physician    | 129 | 3.05 | 0.943 | -6.14*  |
|   | Patient care | 691 | 3.61 | 1.064 |         |
| I am able to identify low literacy behaviors  | Physician    | 130 | 3.24 | 0.913 | -5.39*  |
|   | Patient care | 712 | 3.72 | 0.940 |         |
| I am able to identify protective behaviors  | Physician    | 125 | 3.14 | 1.022 | -5.35*  |
|   | Patient care | 695 | 3.67 | 1.009 |         |
| I am aware of the resources available at CCHMC and in the community                       | Physician    | 129 | 2.61 | 1.085 | -7.73*  |
|   | Patient care | 723 | 3.44 | 1.121 |         |
| I understand the difference between health literacy and low literacy                      | Physician    | 128 | 3.30 | 1.238 | -3.32*  |
|   | Patient care | 726 | 3.68 | 1.188 |         |

\*P<0.05, SD: Standard deviation

**Table 6: Health literacy practices: Evaluating overall domain differences**

| Domains                   | Physician |       |      | Patient |       |      | t-value |
|---------------------------|-----------|-------|------|---------|-------|------|---------|
|                           | n         | Mean  | SD   | n       | Mean  | SD   |         |
| Communication             | 145       | 32.72 | 2.49 | 891     | 32.95 | 2.91 | -0.98   |
| Decision making           | 145       | 43.17 | 4.29 | 891     | 44.81 | 3.57 | -4.45*  |
| Interpersonal skill       | 145       | 37.60 | 3.43 | 891     | 39.14 | 2.80 | -5.22*  |
| Health literacy knowledge | 145       | 23.38 | 5.56 | 891     | 26.04 | 4.89 | -5.23*  |

\*P<0.05, SD: Standard deviation

Our study results showed that there were significant differences in the responses of the physicians and healthcare personnel on shared decision-making. Coulter *et al.* [28] debated the 10 pre-requisites (e.g. policy climate, standards, information and support, training, clinical champions, evidence, metrics, incentives, feasible implementation plan) for implementing shared decision-making in clinical practice and viewed it as an ethical imperative for the professional regulatory bodies. Burkhard *et al.* [44] addressed two main categories regarding the difficulty for physician utilization of shared decision-making:

1. Resource constraints: Physicians have no time to complete the extended interview with patients and no compensation for the time spent completing shared decision making with patients.
2. Interpersonal skills: Interpersonal skills, including the ability to listen to patient concerns by respecting their values and choices and to present all the options for treatment in an unbiased way, were identified as a challenge for physicians [26,44]. Effective interpersonal skills help healthcare providers increase their efficiency for improving patient satisfaction, treatment compliance, and health outcomes. Good interpersonal skills are also necessary for positive interaction between patient and healthcare providers. This is a two-way street in which both speak and listen without interruption. Both parties should ask questions, express opinions, exchange information, and understand fully what the other is trying to say.

The relationship between healthcare providers and patients is one of the most complex relationships; however, Harrington’s meta-analysis of 25 studies showed that increased patient involvement and shared decision making produce better quality

of care, increased satisfaction, better compliance with treatment recommendations and beneficial results for patients [45]. Connor *et al.* [46] conducted a systematic review that included the results of 55 randomized controlled trials showing that patients involved in shared decision making are better informed than those who are not. At this point, effective communication is an essential process in the development of shared decision-making to improve treatment results. To promote a mutualistic relationship by sharing decision-making with the patient/family, both physicians and patient care personnel should advocate working with the patient/family in order to develop an action plan, to form a partnership with the patient/family and use their input to negotiate solutions, and to involve the patient/family in the treatment decisions [47].

To promote more effective communication, knowledge of health literacy is vital for all healthcare providers to fulfill their roles and responsibilities. In our study, all items of “health literacy knowledge domain” significantly differed for physicians and patient care personnel. Both populations should be aware of health literacy issues in their practice. Weiss [12] suggested that there are strategies that can be used to enhance patients’ understanding of medical information as well as to improve communication with patients such as:

- slowing down (speak slowly)
- using plain, nonmedical language (awareness of medical jargon)
- showing or drawing pictures (visual images)
- limiting or repeating the amount of information provided (give small pieces of information)
- using the “teach-back” technique (confirm patient understanding by asking them to repeat back your instructions)
- creating a shame-free environment by encouraging questions (consider using the Ask-Me-3 program).

Williams *et al.* [48] reported that higher levels of health literacy on the part of the patient are usually associated with both better quality patient-physician communications and better individual health.

In short, health literacy has always been present within the healthcare system. Therefore, it is crucial to raise awareness

among healthcare providers regarding more meaningful interactions with patients, improving patient understanding and helping them make appropriate health decisions. Health literacy training for all healthcare professionals plays an important role to create health literate healthcare organizations as well as to reduce the risk of miscommunication between patients/families and healthcare providers [33]. The results of our study revealed insights and suggest that there is an obvious need to dedicate further efforts toward promoting health literacy. The findings were also useful for the health literacy group to plan health literacy initiatives and educational programs for healthcare providers to improve communication with patient and families. In addition, the theoretical framework applied in this study may benefit other hospitals and healthcare settings since health literacy deficits are widespread and present many challenges to the delivery of high-quality healthcare.

### Limitations and Future Research

This study had several limitations. First, the physician sample size was smaller than the patient care personnel. Since we sent the survey through the hospital email system, we were not able to detect how many physicians and patient care personnel (active medical staff) actually opened the survey. Second, the percentage of the respondents did not show ethnic homogeneity within the population (most of them were Caucasian); however, this study still provides valuable information to the institution. Third, since there has never been any study or exposure to the health literacy area, the concept was new to the participants. At this point, we are not sure how much attention they paid when they answered the survey items. Fourth, there is a need to a validated tool: However, the contribution of this study may make toward the development and validation of such a tool. Fourth, there is a need for a validated tool; however, the contribution of this study may make progress toward the development and validation of such a tool. The survey tools used in this study should be tested in other institutions for further validation as well as to compare the educational needs of health providers. In addition, future studies should include a semi-structured interview or focus group format for further insights into the health literacy phenomenon.

### REFERENCES

- Berkman ND, Davis TC, McCormack L. Health literacy: What is it? *J Health Commun* 2010;15 Suppl 2:9-19.
- Health People 2010. Understanding and Improving Health. The Minority Health and Health Equity Archive. Washington, DC: U.S. Department of Health and Human Services; 2000. Available from: <http://www.health-equity.pitt.edu/640/>. [Last accessed on 2014 Nov 11].
- World Health Organization. Health promotion: Track 2: Health literacy and health behavior. Available from: <http://www.who.int/healthpromotion/conferences/7gchp/track2/en/>. [Last accessed on 2014 Nov 11].
- Health literacy: Report of the council on scientific affairs. Ad Hoc committee on health literacy for the council on scientific affairs, American Medical Association. *JAMA* 1999;281:552-7.
- Riegelman RK, Garr DR. Healthy People 2020 and Education for Health: What are the objectives? *Am J Prev Med* 2011;40:203-6.
- U.S. Department of Health and Human Services. Healthy People 2020: Health Communication and Health Information Technology. Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/health-communication-and-health-information-technology>. [Last accessed on 2014 Nov 11].
- iHealth Communications. Transforming Medically Complex Information into Patient Focused Communication Materials: Is Health Literacy Just Another Band Wagon? Available from: <http://www.ihealthcommunications.com/2011/11/17/jumping-on-the-health-literacy-bandwagon/>. [Last accessed on 2014 Nov 11].
- The Joint Commission. What did the doctor say? Improving Health Literacy to Protect Patient Safety, 2007. Available from: [http://www.jointcommission.org/What\\_Did\\_the\\_Doctor\\_Say](http://www.jointcommission.org/What_Did_the_Doctor_Say). [Last accessed on 2014 Nov 11].
- Torpy JM, Burke AE, Golub RM. JAMA patient page. Health literacy. *JAMA* 2011;306:1158.
- Boswell C, Cannon S, Aung K, Eldridge J. An application of health literacy research. *Appl Nurs Res* 2004;17:61-4.
- Nielsen-Bohman L, Panzer AM, Kindig DA, editors. Health Literacy: A Prescription to End Confusion. Washington, DC: The National Academies Press; 2004.
- Weiss BD. Health Literacy and Patient Safety: Help Patients Understand: Manual for Clinicians. 2nd ed. American Medical Association Foundation and American Medical Association Publication; 2007. Available from: [http://www.med.fsu.edu/userFiles/file/ahcc\\_health\\_clinicians\\_manual.pdf](http://www.med.fsu.edu/userFiles/file/ahcc_health_clinicians_manual.pdf). [Last accessed on 2014 Nov 11].
- U.S. Department of Education Institute of Education Sciences National Center for Education Statistics. National Assessment of Adult Literacy (NAAL). Available from: <http://www.nces.ed.gov/naal/>. [Last accessed on 2014 Nov 11].
- Kunter M, Greenberg E, Baer J. A First Look at the Literacy of America's Adults in the 21st Century (NCES 2006-470). Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office; 2005.
- Morrison AK, Myrvik MP, Brousseau DC, Hoffmann RG, Stanley RM. The relationship between parent health literacy and pediatric emergency department utilization: A systematic review. *Acad Pediatr* 2013;13:421-9.
- Safeer RS, Keenan J. Health literacy: The gap between physicians and patients. *Am Fam Physician* 2005;72:463-8.
- Rudd RE, Kirsch IS, Yamamoto K. Literacy and health in America. Policy Information Report. Center for Global Assessment, Policy Information Center, Research and Development, Educational Testing Service; 2004. Available from: <http://www.ets.org/Media/Research/pdf/PICHEATH.pdf>. [Last accessed on 2014 Nov 11].
- Schillinger D, Piette J, Grumbach K, Wang F, Wilson C, Daher C, et al. Closing the loop: Physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003;163:83-90.
- Murphy-Knoll L. Low health literacy puts patients at risk: The Joint Commission proposes solutions to national problem. *J Nurs Care Qual* 2007;22:205-9.
- Emmerton LM, Mampallil L, Kairuz T, McKauge LM, Bush RA. Exploring health literacy competencies in community pharmacy. *Health Expect* 2012;15:12-22.
- Clancy CM. Navigating the Health Care System: Improving Your Health Literacy. Rockville, MD: Agency for Healthcare Research and Quality; 2010. Available from: <http://www.ahrq.gov/news/columns/navigating-the-health-care-system/090710.htm>. [Last accessed on 2014 Nov 11].
- Kickbusch I, Peikant JM, Apfel F, Tsouros AD, editors. Health literacy: The solid facts. World Health Organization; 2013. Available from: [http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0008/190655/e96854.pdf](http://www.euro.who.int/__data/assets/pdf_file/0008/190655/e96854.pdf). [Last accessed on 2014 Nov 11].
- Introduction and overview: Education indicators. Community Research Partners; 2005. Available from: [http://www.s3.amazonaws.com/zanran\\_storage/communityresearchpartners.org/ContentPages/76918755.pdf](http://www.s3.amazonaws.com/zanran_storage/communityresearchpartners.org/ContentPages/76918755.pdf). [Last accessed on 2014 Nov 11].
- Legislative Research Commission. Adult Education and Literacy in Kentucky. Task Force on Adult Education, 2000. Available from: <http://www.lrc.ky.gov/lrcpubs/rr296.pdf>. [Last accessed on 2014 Nov 11].
- Jenkins LB, Kirsch IS. Adult Literacy in Ohio: Results of the State Adult Literacy Survey. Educational Testing Service. Princeton, NJ: 1994. Available from: [https://www.nces.ed.gov/naal/pdf/state\\_summaries/Ohio.pdf](https://www.nces.ed.gov/naal/pdf/state_summaries/Ohio.pdf). [Last accessed on 2014 Nov 11].
- De Negri B, Brown LD, Hernández O, Rosenbaum J, Roter D. Improving Interpersonal Communication Between Health Care



- Providers and Clients. Quality Assurance Methodology Refinement Series 1997. Available from: [http://www.pdf.usaid.gov/pdf\\_docs/PNACE294.pdf](http://www.pdf.usaid.gov/pdf_docs/PNACE294.pdf). [Last accessed on 2014 Nov 11].
27. U.S. Department of Health and Human Services. National Action Plan to Improve Health Literacy. Available from: [http://www.health.gov/communication/hlactionplan/pdf/Health\\_Literacy\\_Action\\_Plan.pdf](http://www.health.gov/communication/hlactionplan/pdf/Health_Literacy_Action_Plan.pdf) [Last accessed on 2014 Nov 11].
  28. Coulter A, Edwards A, Elwyn G, Thomson R. Implementing shared decision making in the UK. *Z Evid Fortbild Qual Gesundheitsw* 2011;105:300-4.
  29. Coulter A. Patient engagement - What works? *J Ambul Care Manage* 2012;35:80-9.
  30. Dyche L. Interpersonal skill in medicine: The essential partner of verbal communication. *J Gen Intern Med* 2007;22:1035-9.
  31. Chan TM, Wallner C, Swoboda TK, Leone KA, Kessler C. Assessing interpersonal and communication skills in emergency medicine. *Acad Emerg Med* 2012;19:1390-402.
  32. McCleary-Jones V. Assessing nursing students' knowledge of health literacy. *Nurse Educ* 2012;37:214-7.
  33. Mackert M, Ball J, Lopez N. Health literacy awareness training for healthcare workers: Improving knowledge and intentions to use clear communication techniques. *Patient Educ Couns* 2011;85:e225-8.
  34. Amalraj S, Starkweather C, Nguyen C, Naeim A. Health literacy, communication, and treatment decision-making in older cancer patients. *Oncology (Williston Park)* 2009;23:369-75.
  35. Ishikawa H, Kiuchi T. Health literacy and health communication. *BioPsychoSocial Medicine*, 2010. Available from: <http://www.bpsmedicine.com/content/4/1/18>. [Last accessed on 2014 Nov 11].
  36. Shaw A, Ibrahim S, Reid F, Ussher M, Rowlands G. Patients' perspectives of the doctor-patient relationship and information giving across a range of literacy levels. *Patient Educ Couns* 2009;75:114-20.
  37. De Walt DA, Callahan LF, Hawk VH, Broucksou KA, Hink A, Rudd R, et al. Health Literacy Universal Precautions Toolkit. AHRQ Publication No. 10-0046-EF. 2010. Available from: <http://www.ahrq.gov/qual/literacy/healthliteracytoolkit.pdf>. [Last accessed on 2014 Nov 11].
  38. Kon AA. The shared decision-making continuum. *JAMA* 2010;304:903-4.
  39. Araujo D, Davids K, Passos P. Ecological validity, representative design, and correspondence between experimental task constraints and behavioral setting: Comments on Rogers, Kadar, and Costall. *Ecol Psychol* 2007;19:69-78.
  40. Sbordone RJ, Long CJ. *Ecological Validity of Neuropsychological Testing*. Boca Raton: CRC Press, 1998.
  41. Patton MQ. *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage, 2002.
  42. Denzin NK, Lincoln YS. *Strategies of Qualitative Inquiry*. Thousand Oaks, CA: Sage Publications; 1998. p. 346.
  43. Street RL, Gordon HS, Haidet P. Physicians' communication and perceptions of patients: Is it how they look, how they talk, or is it just the doctor? *Soc Sci Med* 2007;65:65.
  44. Burkhard C, Doster K, McIntyre H. Shared decision making in health care: Background information and policy options for new hampshire delivery. Nelson A. Rockefeller Center at Dartmouth College; 2011. Available from: [http://www.rockefeller.dartmouth.edu/shop/shared\\_decisionmaking\\_final\\_v10.pdf](http://www.rockefeller.dartmouth.edu/shop/shared_decisionmaking_final_v10.pdf). [Last accessed on 2014 Nov 11].
  45. Harrington J, Noble LM, Newman SP. Improving patients' communication with doctors: A systematic review of intervention studies. *Patient Educ Couns* 2004;52:7-16.
  46. O'Connor AM, Bennett CL, Stacey D, Barry M, Col NF, Eden KB, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev* 2009;CD001431.
  47. McCaffery KJ, Smith SK, Wolf M. The challenge of shared decision making among patients with lower literacy: A framework for research and development. *Med Decis Making* 2010;30:35-44.
  48. Williams MV, Davis T, Parker RM, Weiss BD. The role of health literacy in patient-physician communication. *Fam Med* 2002;34:383-9.

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