Research Note

Health literacy of student pharmacists

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A R T I C L E   I N F O

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A B S T R A C T

Introduction: The primary purpose of this study was to assess the health literacy levels of doctorate of pharmacy students. A secondary objective was to determine if a correlation exists between age, degree prior to pharmacy school, work experience, and health literacy status among these students.

Methods: Participants were first year doctorate of pharmacy students at an accredited college of pharmacy in the Southwestern United States. The design was cross-sectional. Health literacy scores were collected using the Newest Vital Sign (NVS) in English. Health literacy was dichotomized with a score of 0–3 indicating inadequate and 4–6 indicating adequate. A two sample *t*-test or Fisher's exact test was used to compare cofactors between health literacy groups.

Results: Of the 72 first year students, 64 (88.9%) participated. The median NVS score was 5 (lower quartile 5, upper quartile 6). Nearly 90% of students (n = 57) obtained a score of "always adequate literacy." Student age, having a degree before pharmacy school, nor healthcare work experience were significantly different between the two groups.

Discussion: If students enter pharmacy school with a high level of health literacy, they may have difficulties relating to and appropriately educating patients with low health literacy. Knowing this information, we can tailor our teaching about health literacy in curriculums to include strategies that assist students to understand what patients with low heath literacy may experience when interacting with the healthcare system.

Conclusions: Nearly all student pharmacists in the study displayed high health literacy and no correlations to collected characteristics were noted.

Introduction

The Institute of Medicine defines health literacy as "the degree to which individuals can obtain, process, understand, and communicate about health-related information needed to make informed health decisions."[1] Poor health literacy is a major cause of patients' inability to take medications properly and are the root cause of a significant amount of adverse drug events.[2,3] Patients with chronic medical conditions who have low health literacy have been shown to have increased mortality and morbidity.[4–8] Additionally, it is estimated that low health literacy increases health care costs by $106–238 billion per year.[9] It is important for student pharmacists to understand patients' health literacy status to provide the best possible care to these patients. Developing communication skills to effectively work with a broad range of people and recognize social determinants of health are required by the Accreditation Council for Pharmacy Education (ACPE) Key Element 3.6 of Standards 2016.[10] To achieve this Standard, pharmacists

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must be aware of each patient's health literacy level and consider altering their communication strategies for patients with low health literacy.

Early in their career, medical professionals may be unaware of the high prevalence of poor health literacy. Approximately one-third of Americans have limited health literacy, meaning pharmacists will frequently interact with patients who have low health literacy.[11] Health literacy can be challenging to determine based on discussions or interactions with another person. A study of physician residents using their clinical interactions to determine patients' literacy found that the residents greatly overestimated their patients' literacy abilities. Of the 164 patients whom the residents felt had no literacy problems, 59 patients (36%) failed a literacy screen.[12] While health literacy and written literacy are different skills, this study shows that new healthcare professionals may overestimate patients' actual abilities. Explanations for the discrepancy between providers' perceptions and their patient's true abilities are not known.

To date, few studies have examined the health literacy of students. A study in Greece found most college students had fair to high health literacy.[13] To our knowledge, no study has ever evaluated health literacy levels among pharmacy or medicine students. Many may assume that pharmacy students would also have high health literacy. This study analyzes this assumption and discusses the implications pharmacy students' health literacy may have on quality of patient care.

The primary purpose of this study was to assess the health literacy levels of doctorate of pharmacy students. A secondary objective was to determine if a correlation exists between age, college degree, and work experience and health literacy status among these students.

Methods

The University of New Mexico Health Sciences Center Human Research Review Committee approved this study. In this prospective observational study, a health literacy screening was administered to students during their first year in a four-year doctor of pharmacy program. Students were eligible for inclusion if they were enrolled in the University of New Mexico College of Pharmacy Self-Care Therapeutics class (PHRM 719) during the chosen study year. PHRM 719 was selected as it is a course taken by all first-year students, attendance is mandatory for students and learning is driven by student discussion. As a result, small groups of students could be removed from the course for questioning without significant disruption in learning. The assessment of students' health literacy occurred in January and February of their spring semester. This assessment was administered to students early in the pharmacy school program to determine the level of health literacy before they receive specific training in health literacy. The opportunity to participate in this research was offered to students during group case discussions. Researchers visited the classroom, explained the nature of the project and the procedures for the protection of human subjects, and invited students to voluntarily participate.

The first-year student pharmacists were individually brought into a separate classroom and verbally administered the English version of the Newest Vital Sign (NVS), a validated health literacy assessment.[14] The NVS was selected as the screening tool because it can be administered in three to five minutes and is a validated tool for measuring health literacy. To perform the NVS, the participant was provided an image of an ice cream nutrition label. The administrator then verbally asked each participant six questions related to the ingredients and the information on the label. During the exam, the administrator recorded the number of accurate answers. Participants' previous degree(s), age, and healthcare work experience were also verbally collected for demographic information. Four administrators interviewed the students for data collection. The administrators were trained on the NVS and demographic questions. None of the administrators were involved in PHRM 719.

A convenience sampling design was used for the recruitment of participants. The primary endpoint was the score of health literacy assessment. Health literacy score was dichotomized based on number of correct questions as determined by the developer of the NVS: Limited or possibly limited health literacy (NVS 0–3) and adequate health literacy (NVS 4–6). The categories of limited or possibly limited health literacy were combined due to small sample size and the ultimate goal of identifying any student without adequate health literacy. Age was summarized using mean and standard deviation and categorical variables were summarized using frequency and percentage. Age was compared between health literacy groups using two-sample *t*-test while categorical variables were compared between health literacy groups using Fisher's exact test. STATA version 13 (StataCorp, College Station, TX) was used for statistical analysis.

Results

Of the 72 students enrolled in the course, 64 (88.9%) participated. The participants ranged in age from 21 to 35 years (mean 24.2 years, standard deviation 3.2 years). Nearly half the students (56.3%) had a degree before starting pharmacy school. A large majority (79.7%) of students had previous healthcare work experience. The median NVS score was 5 (lower quartile 5, upper quartile 6). Eleven percent of students (7/64) had possibly less than adequate health literacy and the remaining 89% (57/64) had adequate health literacy. Of the seven students who scored below adequate, one student scored a zero, one student scored a 2, and the five remaining students scored a 3. The students' demographic information compared by health literacy group is displayed in Table 1. Although there were no statistically significant differences found between the two health literacy group levels and age, prior degree, or work experience, it should be noted that a greater percentage of students with adequate health literacy did have a prior degree and work experience. In general, more students had prior healthcare work experience and a degree, possibly explaining the reason why this sample of students had more adequate health literacy.