Exploring Health Literacy in Inter-Professional Clinical Simulation: A Pilot Study

Thesis

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in the Graduate School of The Ohio State University

By

Elizabeth JoAnne Markle

Graduate Program in Allied Medicine

The Ohio State University

2017

Thesis Committee

Jill Clutter, PhD, MCHES Advisor

Georgianna Sergakis, PhD, RRT, RTCP, FAAC

Monica Robinson, OTD, OT/L, FAOTA
Abstract

Heath literacy is defined as the ability an individual possesses to obtain, process, communicate and understand basic health information and services in order to make well informed health decisions (Coleman C. A., 2016). Health literacy is an important element in patient-doctor communication and can have implications on overall quality of health of the patient. Low health literacy has been determined to be an increasingly prevalent factor in poor health outcomes and increasing healthcare costs (Haun, 2015). Those who are commonly found to have low health literacy are those of ethnic or cultural minorities, lower educational levels or have reported English as a second language (Heinrich, 2012) (Kutner, 2006). There has been a correlation found between a patient’s health literacy skills and healthcare outcomes (Heinrich, 2012) (Powell, 2005). This can include increased utilization of emergency rooms and inappropriate use of prescription medication. Healthcare providers are vital in evaluating and addressing health literacy. Their contribution in battling this issue can include improving health literacy understanding through educational programs or curriculum, health literacy assessments performed at the patient’s first health system interaction and better interdisciplinary communication or collaboration (Heinrich, 2012) (Lancaster, 2015). This study was conducted in order to better understand the role of interdisciplinary communication in addressing low health literacy as well as observe the current health literacy evaluation
skills of health professional students. The Education for Clinical Interprofessional Simulation Excellence (EClIpSE) performed at The Ohio State University were video recorded and included student participants from the colleges of medicine, nursing, pharmacy, and social work. The results from this study will be used to create an underlying understanding of the student’s ability to identify and address a patient with low health literacy and utilize interdisciplinary communication to ensure a positive healthcare outcome.
I would like to dedicate this thesis to my wonderful parents, Tom and Diane Markle.
Acknowledgments

This work would not have been possible without the support of The Ohio State University College of Nursing who generously allowed me to borrow their video cameras for data collection. I appreciate the participation of the health professional students while performing their ECIpSE sessions.

I am especially indebted to Dr. Jill Clutter, my advisor, who has been supportive of my career goals and who worked actively to ensure that I was able to pursue my academic goals. As my teacher and mentor, she has taught me more than I could ever give her credit for here. I am also grateful to my other committee members, Dr. Georgianna Sergakis and Dr. Monica Robinson and all of their support and help with this project. Each of the members of my Thesis Committee has provided me extensive personal and professional guidance and taught me a great deal about both research and life in general. I would like to thank my good friends, whose encouragement and wisdom first started me on this path. Lastly, I would like to thank my parents, whose love and guidance are with me in whatever I pursue. They are the ultimate role models.
Vita

2011.................................................................Westerville South High School

2015.................................................................B.S. Allied Health, Otterbein University

Fields of Study

Major Field: Allied Medicine
Table of Contents

Abstract ........................................................................................................................................ ii
Dedication ...................................................................................................................................... iv
Acknowledgments ......................................................................................................................... v
Vita .................................................................................................................................................. vi
Chapter 1. Introduction ........................................................................................................... 1
  Background ................................................................................................................................. 1
  Problem Statement ..................................................................................................................... 3
  Purpose of Study ......................................................................................................................... 3
  Research Objectives .................................................................................................................. 4
  Significance of the Study ........................................................................................................... 4
Chapter 2. Literature Review .................................................................................................... 5
  Introduction .................................................................................................................................. 5
  Health Literacy .......................................................................................................................... 5
    Characteristics of Low Health Literacy ..................................................................................... 8
    Statistical Findings: Low Health Literacy ............................................................................... 9
    Healthcare Cost of Low Health Literacy .................................................................................. 11
  Health Literacy Education for Healthcare Providers ............................................................. 12
    Statistical Findings: Health Professional Education ............................................................ 14
  Inter-professional Communication ......................................................................................... 14
  Conclusion .................................................................................................................................. 16
Chapter 3: Methodology ........................................................................................................... 18
  Introduction .................................................................................................................................. 18
  Research Design ......................................................................................................................... 18
  Participants .................................................................................................................................. 19
  Consent ....................................................................................................................................... 20
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td>21</td>
</tr>
<tr>
<td>Qualitative Data Analysis</td>
<td>22</td>
</tr>
<tr>
<td>Chapter 4: Data Analysis</td>
<td>25</td>
</tr>
<tr>
<td>Introduction</td>
<td>25</td>
</tr>
<tr>
<td>Data</td>
<td>27</td>
</tr>
<tr>
<td>Undefined Medical Jargon</td>
<td>27</td>
</tr>
<tr>
<td>Inclusion of Patient</td>
<td>29</td>
</tr>
<tr>
<td>Use of “Teach Back Method”</td>
<td>31</td>
</tr>
<tr>
<td>Use of “Yes” or “No” Questions</td>
<td>32</td>
</tr>
<tr>
<td>Smooth Transition</td>
<td>34</td>
</tr>
<tr>
<td>Chapter 5: Discussion</td>
<td>36</td>
</tr>
<tr>
<td>Introduction</td>
<td>36</td>
</tr>
<tr>
<td>Undefined Medical Jargon</td>
<td>37</td>
</tr>
<tr>
<td>Inclusion of Patient</td>
<td>38</td>
</tr>
<tr>
<td>Use of “Teach Back Method”</td>
<td>38</td>
</tr>
<tr>
<td>Use of “Yes” or “No” Questions</td>
<td>39</td>
</tr>
<tr>
<td>Smooth Transition</td>
<td>40</td>
</tr>
<tr>
<td>Implications of Results</td>
<td>40</td>
</tr>
<tr>
<td>Limitations</td>
<td>41</td>
</tr>
<tr>
<td>Conclusion</td>
<td>42</td>
</tr>
<tr>
<td>Bibliography</td>
<td>44</td>
</tr>
<tr>
<td>Appendix A. Consent Form</td>
<td>47</td>
</tr>
<tr>
<td>Appendix B. Qualitative Analysis Tool</td>
<td>48</td>
</tr>
</tbody>
</table>
Chapter 1. Introduction

**Background**

Health literacy has become a growing concern in healthcare. This relates to the patient’s ability to function within a healthcare setting. This can include the understanding of a diagnosis, treatment plan and following instructions given by healthcare providers (Brinkley-Rubinstein, 2015). Individuals are responsible now more than ever for managing their healthcare needs and must do so in an even more complex healthcare system (Mosley, 2017). When an individual is unable to understand and follow health information, they are in jeopardy of experiencing poor healthcare outcomes (Bendycki, 2008). Those most commonly at risk include individuals who have limited to no income or who speak English as their second language (Kutner, 2006). Patient-healthcare or clinician communication is imperative in ensuring positive healthcare outcomes (Powell, 2005). This communication encompasses both emotional and cognitive aspects. Emotional referring to the trust, empathy and respect that must flow between and the patient and clinician while cognitive refers to the sharing of medical information, patient education and managing expectations (Kelley, 2014). Without the establishment of these types of communication behaviors, there is the risk of increased negative healthcare outcomes (Kelley, 2014). Pre-professional health students are often instructed by didactic methods, role play or viewing of recorded interactions in early
stages of their education (Coleman C. A., 2012). Shifts in clinician instruction also includes asking more open-ended questions, reduction in interrupting the patient, addressing fears or concerns and checking the patient’s understanding of diagnosis and treatment (Kelley, 2014). Improvements in patient-healthcare provider communication have been shown to positively affect healthcare outcomes (Powell, 2005). More must be accomplished in the study of what this instruction includes and if it is having the desired effect of producing healthcare providers who can properly manage an individual with low health literacy (Coleman C. A., 2012) (Green, 2014) (Kelley, 2014). Intertwined with patient-healthcare provider communication, inter-professional communication is also a key element to combatting this growing healthcare concern and must also be addressed early on in pre-professional health student education. Studies reflect that effective communication and dynamic collaboration result in improved healthcare outcomes, especially in patient populations demonstrating low health literacy (Lancaster, 2015).

The patient to healthcare provider and healthcare provider to healthcare provider interactions are crucial to improving overall healthcare outcomes and reducing healthcare costs. While there has been some research conducted on methods of increasing patient health literacy and inter-professional collaboration, there is much to be accomplished with pre-professional health students early education and exposure to this rising issue. In order to better understand these two forms of interaction, this research will focus on observing and defining clear communication behaviors among pre-health professional students in a mock clinical setting.
**Problem Statement**

With an overall increase of negative healthcare outcomes due to low health literacy, there is the need to re-evaluate what healthcare providers can contribute in reducing the misunderstanding of diagnosis, treatment plan and prescription drug or rehabilitation regimes. This re-evaluation must include their educational curriculum on health literacy, early exposure to patients demonstrating low health literacy and overall inter-professional communication and collaboration skills.

**Purpose of Study**

This study observed the capabilities of current health professional students attending The Ohio State University when given the responsibility to care for a patient who demonstrated low health literacy. Ability to recognize health literacy disparities, appropriately address these disparities and utilize inter-professional communication in treatment of patient were all observed. The results from this analysis were used to help identify the need to improve pre-professional health curriculum and early exposure to patients with low health literacy as well as increase the understanding of inter-professional communication and collaboration. The study utilized the Education for Clinical Interprofessional Simulation Excellence (ECIIpSE) to evaluate healthcare students’ communication behavior when working with a patient demonstrating low health literacy and participating in inter-professional communication.
Research Objectives

The objectives of this study were to observe health professional students at The Ohio State University interact with a patient demonstrating low health literacy, specifically observing the use of undefined medical jargon, use of “yes” and “no” questions, inclusion of patient, use of “teach-back” method and application of interprofessional communication and collaboration in designing a patient centered treatment plan by means of a smooth transition among health professional students.

Significance of Study

This study is formatted to act as the ground work for future studies involving utilization of the Education for Clinical Interprofessional Simulation Excellence (EClIpSE) to describe pre-professional health students’ aptitudes with dealing with patients demonstrating low health literacy skills. The EClIpSE act to provide students with virtual teamwork training modules that will be implemented prior to the interprofessional, multi-patient simulations; and evaluate the subsequent collaborative behavior, practitioner competencies related to communication and team interactions in the simulated environment to measure teamwork function and processes. The findings of this research and future research will then be used to directly impact the current curriculum for pre-professional health students. In a broader sense, this could encourage improved ability to identify low health literacy and participation in inter-professional communication that will help combat some of the health literacy disparities prevalent in healthcare today.
Introduction:

There are millions of Americans that are considered health illiterate. One study suggests that 36% of the U.S. adult population have limited health literacy (Tera Howard, 2013). This is generating an issue for the healthcare system because it negatively affects outcomes of care. Adverse healthcare outcomes include increase hospitalization, decrease preventative health care, higher mortality rate and could contribute to racial disparities among outcomes (Green, 2014). Healthcare providers can aid in the push back on this growing issue by tailoring care and communication to the needs of someone who demonstrates low health literacy. This includes minimal use of medical jargon, offering definitions when necessary, asking open ended questions and using the “teach-back” method of ensuring information is understood (Coleman C. A., 2012).

Health Literacy

Described in the Health Literacy Expanded Model, there are four distinct literacy skills considered pertinent for a patient to be considered health literate (Mosley, 2017). These skills include fundamental, scientific, civic and cultural literacy (Mosley, 2017). Healthcare providers can play a pivotal role in identifying when one or more of those
literary skills are low. This makes the communication that occurs between a patient and physician or other healthcare provider is vital in all stages of care. Health literacy can refer to both written and read or verbally conveyed information pertaining to one’s health (Peerson, 2009). Numeracy skills (the ability to understand and interpret numeric data) and general literary skills are both required for an individual to accurately interpret health information given to them in a variety of settings (Rowlands, 2014). Health literacy also refers to the application of listening, analyzing and decision making skills in diverse healthcare scenarios such as understanding medication regimes, engaging in healthcare conversations with a medical professional and giving informed consent (Haun, 2015). There is an increase need for individuals to be health literate not only in a clinical setting but also in their community, workplace and home (Marks, 2012). This means that health literacy does not simply refer to one’s ability to read and understand health information, but also could be linked to psychological, social and/or political factors that also influence health decisions (Marks, 2012). One study suggests that low health literacy can be indicative of low self-efficacy which can result in the inability to fully understand and adhere to medical advice or instruction (Ostini, 2014). Health literacy can also be considered heavily linked to one’s overall literacy abilities and extends to a social class issue (Pleasant, 2014). Age is another contributing factor to low health literacy as it has been identified as one of the contributing factors to health disparities (Ashida, 2011). One study suggests that the highest average of health literacy skills have been found among the ages of 25-39, with a decrease in average health literacy levels as one continues to age (Ashida, 2011). Low literacy skills can imply low health literacy and
although an individual may demonstrate proficient literacy skills, there is no strong
correlation that also shows proficient health literacy (Pleasant, 2014). Health literacy can
indicate a decline in one or more of those facets that affect healthcare decisions such as
cognitive function and critical thinking skills (Ashida, 2011). Often, low health literacy is
the cause of poor health outcomes in general due to misunderstanding of diagnosis and
treatment plan (Coleman C. A., 2016). Inability to understand or correctly interpret
medication labels, blood glucose values or recall verbal or printed material from a health
related visit can result in dosing errors and decrease self-direct health management
(Mosley, 2017). Those with low health literacy have been shown to ask less questions
during healthcare interactions than those who demonstrate adequate levels of health
literacy ability (Aboumatar, 2013). The ability to communicate health information clearly
and effectively has a direct impact on how well an individual can proceed with their
personal healthcare decisions. When an individual is unable to comprehend basic medical
terms, understand prescription instructions and/or general health jargon, there is a
disconnect between desired health outcome and reality (Peerson, 2009). There is also a
negative impact on patient- care provider relationship associated with low health literacy
that hinders positive health outcomes (Ostini, 2014). Low health literacy denotes the
inability or lower capacity to understand basic health terms, receive preventative care and
could imply poorer medical and mental overall health (Peerson, 2009).
Low Health Literacy Characteristics

An individual with low or limited health literacy is more likely to suffer from mismanaged chronic health issues such as obesity, diabetes, hypertension and HIV/AIDS (Quick Guide to Health Literacy, 2016). This mismanagement can also be associated with low self-management skills, which are defined as an individual’s ability, combined with family, community, and health care professionals, to manage symptoms, treatments, and lifestyle changes (Mackey, 2016). Health literacy shortcomings are most prominent in people from areas of low-income, low-education and little to no access to general health education (Peerson, 2009). Minority groups, defined as those that speak English as their second language, and African Americans are also among those who are at a higher risk of low health literacy (Rowlands, 2014). Young adults between the ages of 18 and 24 are also considered to be at risk for low health literacy. Despite the potential access to technology provided via college, young adults are found to be lacking necessary comprehension and summary skills which was result in misunderstanding health related information (Harper, 2014). Older individuals are also at risk for low health literacy and also make up a large portion of patients seen in hospitals or outpatient clinics today (Kobayashi, 2016). Morbidity, mortality and hospital utilization increases as an individual continues to age. As this aging process continues, an individual may become more vulnerable and thus disproportionally negatively impacted by low health literacy (Ashida, 2011). There has been a correlation found between race and ethnicity, education, gender, disability and geographical location and low health literacy and general health disparities (Heinrich, 2012). Chronic diseases are also shown to be
prevalent among those who are considered to have low health literacy skills. Managing a chronic disease requires the ability to access the healthcare system as well as play an active role in the individuals’ self-care (Beauchamp, 2015). People who were considered to have low health literacy are thought to ask fewer questions, remember less than half of what the physician or healthcare provider communicates and are unsure of the next step in their care. They are more likely to be too embarrassed to speak up and ask for clarification or further explanation (Kripalani, 2006). Low health literacy assessment can be pivotal in improving healthcare outcomes. When this assessment is performed at the initial healthcare encounter, healthcare providers can better tailor treatment plans to the patient’s health literacy needs.

Statistical Findings: Health Literacy

In 2003, the National Assessment of Adult Literacy (NAAL) performed a study of adult literacy which included a health literacy study (Kutner, 2006). This study focused on examining the correlation between health literacy and the background characteristics, health practices and preventive education and other health resources available to adults (Kutner, 2006). This study focused on three types of literacy. Prose literacy is the ability to comprehend information from a continuous text, document literacy refers to the ability to comprehend information from non-continuous text while quantitative refers to the ability to identify and perform computations (Kutner, 2006). In addition to these three categories, the health literacy portion included three sub categories that helped better gauge health literacy of the participants. These three sub categories included clinical,
prevention and navigation of health care system. The clinical domain represented the ability to perform tasks such as filling out documentation at a doctor’s office, understanding medication doses and pre-diagnostic testing recommendations. Prevention domain represented the individual’s ability to maintain and improve one’s health by identifying health issues that require medical attention, engage in self-management of illness and developing a healthy lifestyle. Navigation of health care system domain represents the ability to understand insurance policies, eligibility for assistance programs and to give informed consent for healthcare services (Kutner, 2006). Results from this survey showed that about 53% of adults met Intermediate health literacy skills, 12% met Proficient health literacy skills, 22% met Basic health literacy skills while the remaining 14% met Below Basic health literacy skills. Among the results, women were shown to have a higher health literacy skill while minority groups or those who spoke English as a second language had some of the lowest reporting health literacy skills (Kutner, 2006). The previous research is supported with the lower health literacy belonging to those who do not speak English as their primary language and reveals a further need to ensure health education is easy to understand, whether written or verbal. A study performed by The American Institutes for Research found that only 20% of US college students with 4-year degrees and 30% with 2-year degrees demonstrated appropriate levels of basic quantitative literacy skills with more than 50% of those with 4-year degrees and 75% with 2-year demonstrating below a proficient level of literacy (Harper, 2014). These statistics support the trends on those who typically have low health literacy skills and can be beneficial on determining the best mode in which to combat this healthcare issue.
Healthcare Cost of Low Health Literacy

Low health literacy can be linked to increased healthcare costs, especially in patients with chronic diseases (Mantwill, 2015). When there is a deficit in health literacy, there is an increase in hospital or emergency room usage, individuals suffering from chronic diseases and increase usage of Medicare/Medicaid (Kobayashi, 2016). Individuals with low health literacy often misuse healthcare resources or inefficiently mix services resulting in unnecessary treatment or worsening of disease which can lead to higher healthcare costs (Mantwill, 2015). In one study, results showed that those who were at greater risk of low health literacy were also those more likely to use outpatient services than those who had an adequate level of health literacy (Baker, 2004). Increased emergency room visits were more likely among those who demonstrated low health literacy and as one study suggests, ultimately costs $73 billion in healthcare costs annually (Haun, 2015). This could be linked to the increased likelihood of doctors referring patients to the emergency department due to the inability to understand patient concerns, understanding of symptoms and overall poor communication regarding health issues due to low health literacy demonstrated by the patient (Baker, 2004). Excess hospital visits are reported to cost up to $15 billion, with indirect and direct hospital costs nearing $100 and $75 billion, respectively (Cotugna, 2003). Issues related to poor health literacy were once heavily referred to the patient’s ability to process information given to them by a healthcare professional. However, there has been a shift to taking a closer look at how physicians and other healthcare professionals are introduced and instructed regarding this common healthcare problem. It is apparent that the issue of low health
literacy must be addressed. One way in which that can be achieved is to hone in on healthcare provider education on the issue and application of skills learned to identify and address low health literacy. In addition to their exposure to this issue, interdisciplinary communication must also be evaluated to ensure that low health literacy is not only being identified but also addressed amongst a healthcare team.

Health Literacy Education for Healthcare Providers

The difficulties healthcare professionals face with patient education were once considered an issue of poor or low health literacy in respect to the patient (Coleman, 2011). However, a closer look at how well healthcare providers were educated and equipped to care for those who may have a lower overall health knowledge has become a main focus on resolving this healthcare issue (Coleman C. A., 2016). There is a growing gap between patient and physician communication. This gap is greatly influenced by the physician’s inability to identify correctly a patient’s health literacy capabilities (Kripalani, 2006). Additionally, physicians tend to overestimate an individual’s health literacy level and often do not consider it a factor in patient care (Powell, 2005). There is very little information available on the exact education provided to medical students and residents; however, it is clear that the issue of handling low health literacy needs to be addressed. Most medical students and residents are expected to participate in simulations that include practicing sharing fictional, in the sense that they do not actually apply to the “patient”, medical diagnosis and treatment plans to a “patient”. Formal education on the subject is often presented in this manner at most academic settings (Coleman C. A.,
In addition to more formal education, adequate explanation of the situation, expectations for the simulations or assessments should be implemented (Coleman, 2011). Typically, education on health literacy is also achieved by a variety of programs or classes for first or second year medical students and therefore might not contribute sufficiently to the understanding of this issue (Coleman, 2011). These interventions and modes of education include video review, small group role-play, health literacy workshops and didactic teaching (Coleman, 2011). Didactic teaching is a method of teaching that involves one-way transfer of information through various forms of media such as reading, writing or viewing and requires very little engagement of the student (Coleman, 2011). The subject of health literacy is not always considered a vital piece of medical school or residency curriculum (Powell, 2005). Additional literature denotes that healthcare professional students are encouraged to consider health literacy the “new vital sign” and should be aware of the tell-tail signs of someone with low health literacy (Mosley, 2017). The concordance between the patient and the healthcare provider is greatly strengthened when the healthcare provider can address the patient in a manner that is appropriate for that patient (Rosenow, 2005). The ability to recognize low health literacy in a patient and respond accordingly are two very important skills for the healthcare professional. Given the disparity between anticipated healthcare outcomes and reality, there needs to be a closer look at how medical students and residents are educated in regards to health literacy.
Statistical Findings: Health Professional Education

The assessment of health literacy among pre-professional healthcare providers is a somewhat emerging topic. Although it is a factor in healthcare outcomes both negative and positive, little is still known on the best methods in pre-professional healthcare provider education and measurement of health literacy assessment skills. In a study that collected data from 61 institutions only 72.1% reported to have a required health literacy curriculum for their students with the median time spent on the subject being about 3 hours (Coleman C. A., 2012). The most common forms of health literacy education includes didactic teaching, simulations utilizing standardized patients and written examinations and most often occurred during the second year of education. Mock or role-played rounding is considered to be the best method of educating pre-professional health students. When performed in a setting involving the entire healthcare team, it best enables the students to practice health literacy and inter-professional skills (Coleman C. A., 2016).

Inter-professional Communication

Just as patient-doctor communication is vital to positive healthcare outcomes, the communication that occurs amongst a healthcare professional team is also imperative. Interdisciplinary communication, or collaboration, occurs when providers with different knowledge and skill sets interact to constructively influence patient care (Lancaster, 2015). Interdisciplinary communication is most commonly considered to occur between physicians, nurses, unlicensed healthcare professionals, social workers, dieticians and
physical therapists (Aston, 2005). This communication ensures patient safety and quality and coordination of care. The role of interdisciplinary communication is key in preventing healthcare errors that result in patient re-admission, longer lengths of stays or even death. (Lancaster, 2015). When the healthcare team can understand one another’s roles, effectiveness in treatment including patient education and addressing any issues of low health literacy can be improved (Lancaster, 2015). In one study, patients reported an overall better experience with their healthcare professionals when they experienced interdisciplinary communication or collaboration within their personal healthcare team, including a better understanding of treatment plan (Aston, 2005). In addition to the ability to identify low health literacy, healthcare professionals must also be able to participate in quality interdisciplinary communication or collaboration to further combat poor healthcare outcomes. Unfortunately, inter-professional communication skills are not commonly taught in inter-professional settings (Bachmann, 2013). Additionally, there is little contributed to the literature supporting the impact of inter-professional communication training skills on pre-professional health students (Bachmann, 2013). In a study conducted by The Joint Commission (TJC), it was found that approximately 65% of sentinel events occurred as a result of inter-professional communication breakdown (Cornell, 2014). A sentinel even is defined by TJC as any unanticipated event in a healthcare setting resulting in death or serious physical or psychological injury to a patient or patients, not related to the natural course of the patient's illness. Patient-centered care hinges on several factors which include the presence of information sharing, and inter-professional partnership which becomes established through inter-
professional communication (Constand, 2014). Exploring the use of inter-professional communication in the form of the presence of a smooth transition when speaking in an inter-professional group can be beneficial in healthcare students’ development and improving healthcare outcomes.

Conclusion

There are several factors contributing to the increasing issue of low health literacy. To combat this over-arching healthcare issue, patient education and access to this education needs to be evaluated (Rowlands, 2014). Text that is clear, bold and easy to read should be used in any supplemental information provided (Rowlands, 2014). Medical students and residents should be trained to better identify and gauge patient reading skills and health literacy level as well as taught better patient teaching strategies (Powell, 2005). This issue can be addressed by improving the overall literacy skills of the individual but must also be addressed in the formal education of the healthcare provider (Pleasant, 2014). Medical school could provide an increase of health literacy curriculum in their programs as well as integrating more patient-physician simulations as they have shown to improve communication skills (Coleman C. A., 2016). Additionally, creating a healthcare system that is easier to understand, utilize and navigate will help reduce any confusion contributing the low health literacy (Pleasant, 2014).

The focus of this research included observing the patient-healthcare students interaction through the health literacy filter. The data collected will be contributing to the solution of improving healthcare provider education on health literacy. This will be
achieved by way of simulation and will help give insight into the student's ability to recognize health literacy disparities and improve the student’s intrapersonal communication skills.
Chapter 3: Methodology

Introduction

This study focused on the health professional students enrolled at The Ohio State University and their interaction with patients exhibiting low health literacy. Included in this research was the observation of how they proceeded appropriately with a treatment plan for each patient with special emphasis on use of medical terminology or jargon, use of “yes” or “no” questions, inclusion of patient in medical conversations, application of “teach-back” method of teaching and explanation of treatment as well as proper utilization of inter-professional communication and collaboration by means of a smooth transition.

Research Design

Previous studies have been conducted to observe and describe the health literacy skills of health professional students. These research designs have included the use of video recorded sessions involving a standardized patient, role play and critiquing pre-recorded patient-healthcare provider encounters. The current project included the video recording of health professional students during their participation in the ECLIpSE simulation. This included students currently enrolled in the nurse practitioner, nursing,
respiratory therapy, occupational and physical therapy, social work, pharmacy and
dietetic programs at The Ohio State University. This simulation involved two
standardized patients with complex medical conditions. The sessions were recorded from
beginning to end and were independently reviewed by three researchers using a
qualitative analysis tool based upon the previous research (Coleman C. A., 2012) (see
Appendix B). This research design is similar to studies performed by numerous health
professionals, more specifically Dr. Clifford Coleman, but include the observation of
clear communication skills through the lens of health literacy.

Participants

The participant population of the study consisted of the health professional
students enrolled at The Ohio State University who were also enrolled in the following
programs: all senior respiratory therapy students in RESPTHER 5525, all medical dietetic
students in MED DIET 7800, all senior nursing students in NURS 4270, selected acute
care nurse practitioner students in ACNP 7208, selected physical therapy students from
PT 8450 and selected pharmacy students in PHARM 7015. Acute care nurse practitioner
students, physical therapy students, occupational therapy students and pharmacy students
participated based on their respective instructors and based on clinical time and
availability. The simulations were considered a regular part of the curriculum in the
aforementioned courses. The simulations were not implemented or manipulated for
research purposes. In each of the 20 sessions (duration of 2.5 hours), a representative
sample from each discipline, based on the number of students in the program,
participated in the simulation. Each session included approximately: four nursing students, two medical dietetic students, one respiratory therapy student, two physical therapy students, one pharmacy student, and one nurse practitioner student as well as two peer preceptors. Therefore, there was a range of 11-14 students per session. Students that do not wish to participate in the video recordings were asked to stand in an area out of camera range. Non-participants were protected in that the researchers did note the non-participants and made a note on the field notes/data collection page without drawing attention to the non-participant. Audio contributions from non-participants were not analyzed in this study.

The standardized patients were trained actors with what is considered complex medical issues. The first patient, Patient 1, Ann Arbor was a young college student in their early 20s who had been involved in an automobile accident. This accident left this patient intubated with a chest tube and in need of surgery to fix both a fractured hip and remove their spleen. The second patient, Patient 2, Jill Shuman was an older adult in their late 50s from a rural city. This patient had a history of drug and alcohol abuse and was in the hospital after falling at home. This patient ended up having their right leg amputated just under the knee. These standardized patients both demonstrated varying levels of health literacy.

Consent

The consent form (appendix A) was distributed at the beginning of the simulation by the researchers. The consent form explained the purpose of the study and the
expectations should the participant consent to be videotaped. Subjects were asked if they agreed to participate in research, instructed on duration of research, and informed that the researched would ensure the confidentiality of the information they provide. Subjects were told that their participation was voluntary, and they could refuse to participate or they could withdraw at any time without penalty or repercussion. The letter of consent provided information for subjects to contact the investigator(s) if they had questions or concerns about the research. The letter made it clear that the researcher and assistance were affiliated with The Ohio State University. The researchers were not instructors for the courses that were involved in the courses that require the clinical simulation.

**Data Collection**

The data collected for this research was performed at The Ohio State University and involved the EClIpSE simulations. The recording devices were provided by the department of nursing and included the use of two cameras which were set to record from the beginning through the end of the simulations. The data collection included video recorded sessions involving two standardized patients, the inter-professional round performed by health professional students and a debrief session. This research was approved by the International Review Board before the commencement of data collection.
**Qualitative Data Analysis**

Qualitative analysis allows researchers to observe general or specific behaviors within a particular data set most commonly made up of human subjects (Castro, 2007). This analysis enables the researcher to identify trends within this data set and make conclusions in regards to the subject matter being studied. This type of analysis is useful when there are little to no quantitative data collect or the study includes human or animal behavioral observation.

Previous research utilizing this method of analysis included free-text comments after patient interactions, viewing of previously recorded and commenting on interaction and audiotape review of recorded questionnaires (A.Pa, 2015) (Castro, 2007). Some research studies also included the observation of clear communication tactics in a patient-physician interaction (Howard, 2013). Often, categories such as use of medical jargon, the use of “teach-back” method of education and asking open ended questions directed to the patient have been used in analysis of behavior of the healthcare provider (Coleman C. A., 2016). Medical jargon refers to the use of medical terminology in reference to assessing symptoms, delivering results, providing health education and making recommendations (Castro, 2007). Observers listen to audio recorded interactions or read transcripts of patient-physician interactions to extrapolate moments where medical jargon are used and observe whether that medical jargon remains undefined (Deuster, 2008). There have been other studies that focus on the professionalism of the physician based off the observed communication skills such as use of medical jargon and asking open ended questions (A.Pa, 2015). Dr. Clifford Coleman, MD, MPH, a leading expert on this
emerging topic of health literacy education, has provided numerous publications on this subject matter. His focus included the education of pre-professional health students on the topic of identifying and addressing low health literacy. Much of his early work had the intent to discuss health literacy behaviors and competencies but has since moved towards the terminology of observing clear communication behaviors backed by the theory that health literacy is the set of factors possessed by patients and caregivers, and “clear communication” is the corollary set of factors possessed by health professionals. The work performed by Dr. Coleman greatly influenced the design and focus of this research project and his input was influential in creating a qualitative analysis to process the data collected.

This research included the video recording of pre-health professional students while participating in the ECIIpSE simulations at The Ohio State University. Due to the lack of previous research involving the recording a patient-healthcare provider simulation and reviewing and observing specific behaviors linked to health literacy, there were not very many peer-review articles to draw a comparison or from which to glean information. From what was available, the data collected in this research was analyzed and reviewed independently by three different researchers: two undergraduate research assistants and the primary investigator. This analysis consisted of reviewing the video recorded ECIIpSE sessions and listening for the following: medical jargon pertaining to diagnosis, medication and treatment plan, inclusion of patient by means of addressing patient by name and including them in the conversation, utilizing the method of “teach-back” to ensure that the patient understood what was being said, open ended questions
that allow the patient to answer more than ‘yes’ or ‘no’ and lastly, smooth transition between the different healthcare careers represented around the bedside. Occurrences throughout the video recordings of each category were recorded using a qualitative analysis, also referred to as a video score sheet. These major themes were observed and categorized to meet the purpose of this research. The qualitative analysis tool utilized to record and categorize these major themes and can be found in Appendix B. Additional comments of the data are found in the discussion section.
Chapter 4: Data Analysis

Introduction

The previous chapters discuss the importance of appropriate communication between a healthcare professional and the patient as well as amongst healthcare professionals as an interdisciplinary group. Five key elements to ensuring understandable information exchange or conversation between a healthcare professional, patient and healthcare group were identified and discussed. These elements or themes were the focus of a qualitative analysis of two video and audio recordings collected as described in the methodology chapter. These recorded sessions were reviewed with the intent to observe the communication behaviors of health professional students as they relate to patient-healthcare professional communication through the lens of health literacy and interprofessional communication.

Over 500 minutes of qualitative data was collected and analyzed independently by three different observers: two undergraduate research assistants and the primary investigator, to procure an objective analysis of the data. The recordings will be referred to as session 1 and session 2 followed by the patient with whom they involved. The patient will be referred to as Patient 1, Ann Arbor and Patient 2, Jill Shuman. The data collected mimics that of earlier studies mentioned in the beginning chapters of this thesis. This was accomplished by filming the students as they participated in an EClIpSE
simulation. The undergraduate research assistant and primary investigator chose to mark the analysis tool each time a healthcare student was observed to engage in one of the communication behaviors chosen for this study. This resulted in multiple pages of analysis indicating each individual occurrence of observed communication behavior. The other undergraduate research assistant chose to mark the analysis tool slightly differently. They marked the tool as the communication behavior was observed per profession. This resulted in less pages of analysis, clustering the time of occurrences per profession represented. The analysis of the recordings were performed in an attempt to gain further insight into the current skill sets possessed by health professional students when interacting with a patient demonstrating low health literacy as well as with each other as an interdisciplinary group. As a pilot study, this project was performed in hopes to enable future studies to be carried out such that a much more comprehensive idea of these skills sets is established. The data presented will focus on the five major themes discussed in earlier chapters: undefined medical jargon, inclusion of patient, use of “teach back” method, use of “yes” or “no” questions and a smooth transition. Each theme will be described as they occurred, or not, throughout the recordings. This analysis acts to fill the gap of knowledge that exists currently when considering the communication behaviors of health professional students. Through the outlined, structured analysis of interactions in this specific setting, there will be an increase of knowledge and understanding of how the health professional students engage with patients demonstrating low health literacy in addition to each other as a cohort.
Data

Undefined Medical Jargon

Throughout the recorded interactions, undefined medical jargon was observed by all three investigators to occur several times among most of the professions represented. It would seem that many of the incidents occurred while the student would address other students in the presence of the patient. Several health professional students utilized medical jargon when given time to share with the group the recommendations for care based off their personal, individual assessment of the patient. An example of this theme was marked by all three researchers to have occurred in session one with patient 1, Ann Arbor, at about minute 30:10, the nurse practitioner student referred to all the patient’s diagnoses, treatment and medications by their formal medical title shortly after introducing the patient to the group at the beginning of the round.

“…She as driving as an unrestrained driver and, um, she did not have any unconsciousness and on arrival she was complaining of right chest pain, left upper quadrant pain and left pain, left neck pain. So, um, her vital signs on admission were marginal her blood pressure was in the 80s, she was a little tachycardia, um, her saturation was 94 and she was breathing about 32 times a minute. Her, um, ABG was on 100% [in audible words] somewhat marginal, SpO2 [again in audible]…also on admission her hemoglobin was 9.7, her beta-HCG was negative, she is 25 years old and did receive her tetanus shot down in the ED. So the FAST examine in the ED was unremarkable, her CT of the head was negative, um, however, so the head was negative, no bleed, no head bleed, the CT did show she have right rib fractures, with a hemothorax, so they placed a chest tube down in the ED. She also had [inaudible] contusion and then from the left upper quad pain, they have noticed a small laceration and, um, she had the left open, femur fracture…she was taken to the operating room, she ended up having a open splenectomy, and then they did fix her left femur fraction.”

Here the Nurse Practitioner student does what the literature advises against when interacting with a patient, especially when discussing the patient’s care or treatment plan.
Another example of this major theme was observed by two of the three researchers to occur at about the 37:40 minute in the same video with Patient 1, Ann Arbor; the pharmacy student offers their assessment and recommendations when speaking with the group about their concerns regarding the medication status of the patient,

“Hi, I’m Scott. We’re from pharmacy, I was the one assigned to this case. So I basically took a look at a few of her medications and from what she’s on, it seems like her pains pretty well controlled because I know she’s taking less and less of her pain medication pain these days. So, um, not a lot to worry about there. I saw that she is still taking the antibiotic that she took for the prophylaxis for the surgery and I wasn’t sure, I don’t know if any saw that she’s showing signs of infection or specific risk factors for any reason why she should still be on that?...Everything else looks pretty good. Her kidneys look like they’re working well. Her, um, INR didn’t look too crazy so she should probably only need to be on the blood thinner for another three days and then be fine to come off that…okay and the last thing was, there was talk that um, no bowel movements lately…probably due to the opioids so you’re going to want to go stimulates and start on her on senna, twice a day.”

Without including the patient in this type of dialogue, or ensuring that the patient understands what is being said the health professional student runs the risk of increased confusion or non-compliance later. Later in the recording at minute 92:01, a nursing student asked the nurse practitioner if a “barium swallow test” would be needed while all were still in the presence of the patient. This use of undefined medical jargon was only marked by the researcher and occurred while the students were engaging with the patient as a group. Asking questions about specific medical procedures in front of the patient could be a potential issue as it could cause the patient to have increased confusion or questions about their care.

The health professional students were also observed engaging in what literature considers positive behaviors that included defining any articulated medical jargon. An
example of this can be found in the session one recording between the respiratory therapist student and patient 1, Ann Arbor. At minute 9:15 the student takes a moment to define a few medical terms that were utilized when describing to the patient, “yesterday they put you on what’s called a Spontaneous Breathing Trail and that just means we want to see how you are breathing on your own, and your results were really good. We’re going to think about taking that tube out of your throat.” Later, as a group at the 34:53 minute in the session one recording with Patient 1, Ann Arbor, the Respiratory Therapist student addresses both the patient and the group and shares their care plan. The student takes care to follow up terms such as Spontaneous Breathing Trial and f/Vt with their respective definitions in layman terms. This type of communication behavior is positive as it allows the patient to clearly understand what has occurred with their treatment and will be occurring as they move forward with care.

After careful analysis of these recordings, further insight was gained into the utilization of undefined medical jargon among this group of health professional students and expand the understanding of communication behaviors within this specific group of students.

Inclusion of Patient

Inclusion of Patient was observed to occur several times throughout the recordings among a variety of health professional students. The nurse practitioner is an exemplar of this communication behavior at minute 30:10 while working as a group during session 1 with patient 1, Ann Arbor.
“Good morning, Ann Arbor, this is Ms. Ann Arbor, since she is intubated and is unable to talk…So, um, Ms. Ann Arbor, our, we’re here to round this morning and, um, we will figure out the plan of care for the rest of today and then we’ll make sure you’re part of it. We will get you some paper and a pencil so you can write if you have any questions for us. We’ll come up with a plan and make sure you know what is going on.”

The nurse practitioner addresses the patient in first person and informs her of their intentions and goals for the day, which is a form of including the patient.

The physical and occupational therapy students were working together during session 1 with Patient 1 and at 68:20 they were observed to be thoroughly explaining what they would be doing, continuously including the patient in the instruction on transitioning out of bed and checking pain levels throughout the process. Later, in the same session with the same patient, at 89:42, again the physical therapy included the patient when determining the best recommendation for care upon discharge ensuring that the situation of the patient was most accurately understood and taken into consideration, “do you live on the first floor or second floor? [Patient answers] Okay, do you have anywhere else you could live that does not have an upstairs?” It is interesting to note that this student also stood close to the head of the bed and leaned over to make eye contact with the patient during this exchange. This non-verbal communication behavior can also be seen in the video recording.

The respiratory students, in session 2 with patient 1 starting at minute 197:40, Ann Arbor, demonstrated this communication behavior while proceeding the extubate the patient, “we are going to take this tube out and start you on some oxygen…on the count of three, you will take a deep breathe in, you’ll feel a rush of air and you’ll need to cough so we can take that tube out, okay?” The respiratory therapist student was leaning in,
making eye contact with the patient, speaking slowly and waiting for confirmation from
the patient to move on with the procedure. Again, the respiratory student during session 2
with Patient 2, Jill Shuman demonstrated this technique at 221:57, “…the nurse
practitioner just put in an order for a sputum culture, so if you cough anything up we are
going to take it and [inaudible] to see what is growing in there…” This type of
communication with the patient keeps them informed and up-to-date on what is being
expected from them during their hospital stay.

Inclusion of patient is important in earning the trust and compliance of the patient,
especially one with low health literacy. After reviewing the recordings, the student’s use
of this communication was further observed.

Use of “Teach Back” Method

During the ECLIpSE sessions the method of “Teach Back” mimics that of
educating the patient. Literature suggests that this should be utilized to ensure that the
information given to the patient is understood however it was observed to most
commonly appear like educating the patient. Overall, all three investigators observed this
particular communication behavior to occur the least. While the exact technique might
not have been demonstrated, it was noted to have occurred during session 1 with Patient
1 at 14:10 while the nursing student worked with the patient to change her dressings,
“we want to keep the dressing on to prevent infection. You are at a really high risk right
now for infection, so if it is itchy, let us know…” It is very important to note that the
nursing student maintains direct eye contact with the patient and uses head gestures such
as a head nod to ensure that the patient understand what they are saying. The nursing student not only engaged with the patient while changing the dressing but then also used this technique to make sure that the patient understood the importance in keeping the dressings on her wounds. Later, at 58:20-61:06 of session 2, the occupational therapy and physical therapy student both use this technique to educate patient 2, Jill Shuman about the importance of completing ADLs (activities of daily living) and keeping their injured knee wrapped, respectively. The physical therapy student was again observed to be demonstrating this communication behavior at 199:58 when they educated the patient about what to do when she felt dizzy,

“…some really good things to do when you’ve been laying down for so long, just take it easy, go slow, go at your own pace and don’t try to rush it. We want to make sure you’re safe…at times when you start feeling dizzy: stop, take nice deep breaths through your nose and long exhale out of your mouth and keep doing that until you feel better.”

The recordings indicate that the physical therapy and respiratory students demonstrated the communication behavior of “teach back method” the most when working with a patient exhibiting low health literacy skills. This communication behavior is vital in establishing a clear understanding in the mind of the patient, particularly one with low health literacy, if the diagnosis and treatment plan.

Use of “Yes” or “No” Questions

Throughout the student-patient interactions there was a significant use of “Yes” or “No” questions among all of the health professional students. The uses of this type of
question were at times very appropriate however, at times the use of “yes” or “no” questions were vague or seemingly excessive compared to what literature suggests.

Within the first 20 minutes of session 1, the respiratory therapist, nursing and nurse practitioner students all asked Patient 1, Ann Arbor, questions that required a “yes” or “no” response. It is important to mention again that this patient is intubated for the first portion of the recording and is not extubated until after the first group round with the patient. An example of the “yes” or “no” question occurred at minute 12:20 of session 1 with Patient 1, “does this up there hurt at all?” The nursing student asks this question while initially assessing the patient. This is an example of a vague “yes” or “no” question that does not improve the communication between the patient and medical provider. The dietetic student was recorded to demonstrate this communication behavior as well at minute 166:20 during session 2 with Patient 2, Jill Shuman, while discussing their eating progress and diet, “have you ever heard of a dietitian before and what they do or anything?” This type of question could have been better phrased by asking what the patient knew about a dietitian before diving into the conversation.

Conversely, some of the students were observed to be engaging the patient without using “Yes” or “No” questions. For example, at minute 15:06 the nurse practitioner student is working with patient 1, Ann Arbor:

“I am just going to check you out real quick. Do you have any pain right now? You can show me with your hands on a scale 0 to 10. Can you point where the pain is? And is it a 5 in all of those areas? Does it go up when you move around?”

It is important to also mention that while this dialogue is occurring, the nurse practitioner is also using hand gestures to help work the patient to best answer the questions. This
opposite communication behavior was also recorded starting in minute 12:28 of session 1 with patient 2, Jill Shuman and the nursing students during their initial assessment. “what does your pain feel like?...Is there anything you do that makes it feel better?...Have you tried anything else other than pain meds? Exactly which part of your leg is most painful?” These type of open-ended questions encourage patient 2 to expand and explain what was being experienced which helped give the students a more thorough assessment.

This communication behavior was recorded to happen often throughout each recording and was observed to occur amongst each health professional student. The nursing, nurse practitioner and pharmacy students were recorded to have utilized this behavior the most during the recording sessions.

Smooth Transition

A smooth transition was marked during the group consultation that occurred while the health professional students performed a practice grand round on each standardized patient as well at moments when multiple professions were assessing the patient at the same time/right after one another. There was an observed smooth transition between the respiratory and nursing student at minute 21:35 of session 1 with Patient 2, Jill Shuman, “okay, Jill, we will be back to check on you. Respiratory therapy is here to see you…” A smooth transition was also marked to have occurred between the dietitian and nurse practitioner students at minute 171:38 during session 2 with Patient 2, Jill Shuman, “so we want to start over here with respiratory therapy on any input that you guys have on the plan…” The majority of transitions that occurred throughout all
sessions of the recordings included gesture, motioning with hands or head, and the students seemingly filling the silence that would follow another student’s assessment or recommendations. In all recorded sessions, the nurse practitioner seemed to take the lead in each grand round, starting off any initial introductions and overview of patient.

Overall, the health professional students were observed to have demonstrated positive patient-healthcare provider and inter-professional communication skills by means of engaging in a smooth transition.
Chapter 5: Discussion

**Introduction:**

Low health literacy has quickly become a prominent issue faced by many healthcare professionals today. The impact of individuals with low health literacy skills has a large range of effects. These include negative or poor healthcare outcomes and extend as far as increased mortality rates, especially amongst the elderly and those living in rural, low-income areas and individuals whose primary language are not English. The research study was performed with the intent to observe the current communication behaviors and skills of health professional students while interacting with patients with low health literacy during the ECIIPSE simulations. The research observed the inter-professional communication skills observed during these simulations as well. The data was collected via video recording and involved the qualitative analysis review of the video collected. One analysis included reviewing the recording as a whole and simply marked when each theme occurred and by which health professional student while the other reviewed each simulation and patient interaction individually. This observation provided a baseline for the communication behaviors of these students when engaged with a patient demonstrating low health literacy as well as inter-professional communication skills.
Undefined Medical Jargon

From previously discussed literature, the occurrence of undefined medical jargon can be considered a crucial mistake made by health professionals when interacting with patients (Peerson, 2009). Undefined medical jargon can leave patients with low health literacy confused and more likely to visit the emergency room, misuse a prescription medication and participate in preventive care (Peerson, 2009). Research suggests that a reduction in the occurrence of undefined medical jargon can reduce the incidence rate of the negative healthcare outcomes listed above (Coleman C. A., 2016). The undefined medical jargon seemed to most commonly occur during the grand rounds while the students addressed the other professions. Undefined medical jargon was observed to occur in both individual and group interactions. This type of communication in front of the patient is discouraged as discussed in the literature. It is also important to comment that later, during the debriefing portion of the simulations, many students mentioned how they learned more about what each profession does and how at times they were unsure what each individual assessment meant in connection with what they assessed and suggested. Undefined medical jargon could play a role in preventing other medical professionals from fully understanding one another and creating a treatment plan that is clear for the team and patient.
**Inclusion of Patient**

The inclusion of patient, as discussed in a previous chapter, involves engaging the patient in the conversation about their medical care (Green, 2014). Including the patient can help increase the patient’s trust in the healthcare provider which could directly result in improved healthcare outcomes (Lancaster, 2015). When a patient who demonstrated low health literacy is included in the treatment plan they are more likely to participate in the decision making process which reduces confusion and risk of poor health outcomes (Aboumatar, 2013). This communication behavior was utilized among some of the health professional students but was not observed to always occur in the group settings. Including the patient was best represented by the students who were observed to use the words “you” and “your” when speaking with the patient individually and as a large group. Increased inclusion of the patient can help in increasing positive healthcare outcomes.

**Use of “Teach Back”**

The use of “teach back” is a helpful technique in ensuring that the information relayed to the patient is correctly heard and understood (Coleman, 2011). This method of instruction allows the patient to process and repeat any information given which permits the healthcare provider the opportunity to confirm that the medical information has accurately been conveyed and understood (Coleman C. A., 2016). During the recordings, “teach back” resembled that of patient education. This communication behavior was observed the least among all students in both recordings. While some students took the
opportunity to explain to their patient why tests, procedures or activities were needed, not all took the chance to instruct the patient. Patient education that can then lead to the actual use of the “teach back” method can play a vital role in improving patient compliance and understanding.

**Use of “Yes” or “No” Questions**

“Yes” or “No” questions do not allow the patient to adequately express how they might be feeling and limit the knowledge gained in a healthcare professional-patient interaction (Bachmann, 2013). As the literature suggests, opened ended questions can be quite beneficial in both understanding the patient’s needs as well as establishing a sense of genuine concern and interest on the behalf of the healthcare provider (Constand, 2014). “Yes” or “No” questions were often necessary for this study as one of the standardized patients were intubated. However, some of the patients still were observed to glean more information from the patient while in this state by means of asking for use of hand gestures, which was considered to be using more than just “yes” or “no” questions to gather information. After the standardized patient was extubated, the use of “yes” or “no” questions was still observe to occur in both the individual and group interactions. Literature recommends that medical professionals move away from the “yes” and “no” questions when appropriate and utilize open-ended questions to gather more information and improve the patient-provider relationship.
Smooth Transition

Inter-professional collaboration and communication both play an important part in guaranteeing positive healthcare outcomes (Lancaster, 2015). A smooth transition between the different professions in the presence of a patient can help create an atmosphere of unity and reduce confusion (Aston, 2005). The healthcare students were not observe to have a smooth transition amongst each other in the group setting, unless one of the healthcare students, and in this project it most commonly was observe to be the Nurse Practitioner student, took charge of the group and indicated when the next profession should speak. When this type of direction was not observed to occur, there seemed to be longer pauses between speakers and a general sense of disconnect among the group. Lack of smooth transitions can be confusing for both the patient and the other healthcare professions involved and can be even more detrimental to those with low health literacy and are struggling to understand.

Implication of Results

These EClIpSE simulations offered two kinds types of individuals demonstrating low health literacy: the older adult who lives in a rural, lower income area and the younger adult who, although in college, may not have as much experience in the medical world. Both are considered at risk of low health literacy and represent a larger population of individuals within the healthcare system today. The data collected represent the observed communication behaviors among the healthcare students as they relate to health literacy and inter-professional communication skills. Data analysis suggest that the some
of the students demonstrated some communication behaviors that could have an overall negative impact on healthcare outcomes and do not address low health literacy issues among certain patient populations. Additionally, the students were observed to inconsistently engage in inter-professional communication. Conversely, the data also revealed that these health professional students did engage, to some extent, in communication behaviors that would adequately address a patient with low health literacy skills and utilize inter-professional communication that promotes positive healthcare outcomes. The data collected could be useful in establishing a baseline for patient-health care provider and inter-professional communication behaviors and skills amongst the pre-professional healthcare students. This baseline could be used to explore modes of improving current curriculum or creating new opportunities for pre-professional healthcare students to further develop and practice positive patient and inter-professional communication skills. One example of this improvement could include having the students watch shorter recordings of them interacting with the patient and performing a self-analysis before attempting to engage with the patient again. This could help expose what they do not know about their own communication behaviors and as literature recommends, gives them the opportunity to recognize areas of improvement.

Limitations

This pilot study laid the groundwork for future studies to be conducted focusing on observing the communication skills of health professional students as it directly relates to address health literacy. This project could be easily replicated although some changes
could be applied to further improve the research and data collection. The ECIIpSE sessions could be filmed for several days which will ensure that more video is collected for reviewing. With more video, there are increased communication skills and interactions to observe. Once a larger amount of data is collected, observed and analyzed this information can be used to generate a more comprehensive representation of the entire pre-professional health student population and their communication behaviors.

The reviewing of the recording process could be clearly demonstrated to ensure that the video recordings are analyzed as consistently as possible. This could include written or in person instruction that will allow each reviewer the opportunity to ask questions if needed. Future data will be collect and reviewed in similar manners, making for easier to understand results.

**Conclusion**

The pilot study gathered data representing the observed communication behaviors between the health professional students as well as inter-professional communication skills. Overall, the students were observed to use “yes” or “no questions” the most and “teach back method” the least. Many of the students who utilized non-open-ended questions during their assessments were also observed to often speak to or about the patient using third person. It is interesting to note that students who asked open-ended questions also were also observed to be including the patient which suggests that if one communication behavior is observed, another is likely to also occur. This data showed that there is room for improvement in the communication skills between the health
professional students and patients demonstrating low health literacy as well as inter-professional communication skills. However, the data did show that these students were observed to exhibit some positive communication skills with those with low health literacy and as an inter-professional group. Additional recording and analysis is needed to further establish the communication behavior and inter-professional communication level of skill. Those who are responsible for health professional student curriculum might find this data interesting and beneficial in making improvements to the current offerings on the topic of working with those demonstrating low health literacy and engaging in inter-professional communication. This data can then be used to improve health professional student instruction and education to better prepare them to interact and treat patients with low health literacy and improve inter-professional communication skills.


Appendix A. Consent Form

Exploring Health Literacy in Inter-professional Clinical Simulation: A Pilot Study

• The inter-professional clinical simulations involve simulations that are normally occurring for educational purposes, and the researchers are interested in studying them for research purposes.
• Your participation in the research is voluntary and you may withdraw at any time without penalty or loss of benefits.
• You are being asked to participate in the study because we are examining the potential benefits of clinical simulations on teamwork and communication. The research will examine health literacy practices in the simulation.
• The clinical simulations will be performed regardless of research aims. Participation in the research or not will have no bearing upon your standing in the class or program.
• As part of the research study, the simulation will be captured on video.
• After participating in the clinical simulation, you will be asked to debrief about the simulation and the debrief session will be recorded on video. A transcript of the responses in the debriefing session will not include names or any identifiers and the video recordings will be utilized solely for research purposes to observe interactions between the disciplines.
• The entire session will last approximately 2.5 hours.

By signing below, I consent to participate in the activities described above. I am allowing my participation in the simulation and video recording to be used for research purposes.

Signature: _____________________________    Date: ________________

Contact for questions and concerns:
Jill Clutter – Research Advisor
453 W. 10th Avenue
306H Atwell Hall, Columbus, OH 43210
(614) 292-8112 – Office clutter.1@osu.edu

For questions about your rights as a participant in this study or to discuss other study related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1800-678-6251.
Appendix B. Data Collection Tool

<table>
<thead>
<tr>
<th>Major Themes</th>
<th>Profession Represented</th>
<th>Time of Occurrence</th>
<th>Undefined Medical Jargon</th>
<th>Inclusion of Patient</th>
<th>Use of &quot;Teach Back&quot; Method</th>
<th>Use of 'Yes' or 'No' Questions</th>
<th>Smooth Transition (Y/N)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>