

2020

## Predictors of Intention to Use Health Literacy Strategies Among Physicians in Grenada

Arlette Wildman  
*Walden University*

Follow this and additional works at: <https://scholarworks.waldenu.edu/dissertations>



Part of the [Psychology Commons](#), and the [Public Health Education and Promotion Commons](#)

---

This Dissertation is brought to you for free and open access by the Walden Dissertations and Doctoral Studies Collection at ScholarWorks. It has been accepted for inclusion in Walden Dissertations and Doctoral Studies by an authorized administrator of ScholarWorks. For more information, please contact [ScholarWorks@waldenu.edu](mailto:ScholarWorks@waldenu.edu).

# Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Arlette Wildman

has been found to be complete and satisfactory in all respects,  
and that any and all revisions required by  
the review committee have been made.

## Review Committee

Dr. Patti Barrows, Committee Chairperson, Psychology Faculty

Dr. Anthony Napoli, Committee Member, Psychology Faculty

Dr. Rhonda Bohs, University Reviewer, Psychology Faculty

Chief Academic Officer and Provost  
Sue Subocz, Ph.D.

Walden University  
2020

Abstract

Predictors of Intention to Use Health Literacy Strategies Among Physicians in Grenada

by

Arlette Wildman

MA, Midwestern State University, 1998

BS, Midwestern State University, 1995

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

May 2020

## Abstract

Low health literacy is linked to poor health outcomes. Adequate health literacy depends on effective communication between patients and their healthcare providers, so it is important physicians use health literacy strategies. Grounded in the theory of planned behavior, the aim of this quantitative correlational study was to investigate the relationship between health literacy knowledge, health literacy experience, gender, the region of training, years of practice, and intentions to use health literacy strategies among physicians in Grenada. One hundred and eighteen physicians were sampled using a cross-sectional survey method. The results of the multiple linear regression analysis were significant,  $F(5, 112) = 7.38, p < .001, R^2 = .248$ . Health literacy knowledge ( $t = 3.901, p < .001$ ), health literacy experience ( $t = 3.056, p = .003$ ), and years in practice ( $t = -.195, p = .027$ ) significantly predicted intentions to use health literacy strategies. Gender and region of training did not provide any predictive value. The implications for positive social change include the potential for health literacy training and inclusion in medical school curricula. The provision of health literacy training at all levels of education and practice aid in ensuring physicians are knowledgeable about the health literacy process, able to use strategies that can improve patients' health literacy, and able to improve patient health outcomes.

Predictors of Intention to Use Health Literacy Strategies Among Physicians in Grenada

by

Arlette Wildman

MA, Midwestern State University, 1998

BS, Midwestern State University, 1995

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

May 2020

## Dedication

This dissertation would not have been possible without the help from the Most High and for His intervention; I am humbled and grateful. This dissertation is dedicated to my parents, Lethon and Wilma Herry. Without your moral and financial support, this achievement would not have been possible. You instilled in us a thirst for knowledge and a spirit of ambition and conscientiousness, all of which allowed me to complete this venture, and I am forever grateful to you. To my awesome children, Trent and Ariel, I cannot begin to express how much your support and love for me have kept me going throughout this journey. The “Mom, you got this!” to the “This too shall pass!” motivated me more than you will ever know. I love you both endlessly! To my sisters, Michal and Lystra, thanks for your continuous encouragement along this journey.

## Acknowledgments

There are so many people who helped to make this dream a reality. First, I thank Dr. Patti Barrows for her guidance, patience, and reality checks throughout this process. You made this journey much smoother than I expected and for that I am very grateful. To Dr. Tony Napoli, thanks for your amazing Advanced Quants class, which gave me the start that I needed for the challenging maze that is data analysis. I promise never to let dust collect on my Andy Field's books. Additionally, I have to acknowledge the help of Dr. Reggie Taylor from the Center of Research Quality as your guidance and feedback were invaluable. Dr. Jessie Lee, thanks for your motivation and belief in me to get this done.

A special thank you to Dean Marios Loukas, Dr. Lucy Clunes, Dr. Karen Blackmon, Dr. Ian Baptiste, and so many other colleagues for your support and encouragement throughout this process.

A heartfelt thanks to the Grenada Medical Association who wholeheartedly supported the data collection process – without your help, this dream would not be a reality.

To my dissertation buddy and dear friend, Lauren, words cannot express my gratitude to you – having you to vent my frustrations and celebrate my milestones has been amazing – thank you for taking this journey with me and congrats on your achievement!

Finally, to my girls – Sacha, Zanifa, Jenelle, Tonya, Alyssa, Donnette, and all my friends who have been supportive and patient with me throughout the years despite the

events that I missed while I was in Walden mode – thank you from the bottom of my heart!



## Table of Contents

List of Tables .....	v
List of Figures .....	vi
Chapter 1: Introduction to the Study .....	1
Introduction .....	1
Background .....	2
Problem Statement .....	4
Purpose of the Study .....	5
Research Questions and Hypotheses .....	6
Theoretical Foundation .....	7
Nature of the Study .....	8
Definitions .....	9
Assumptions .....	9
Scope and Delimitations .....	10
Limitations .....	10
Significance .....	11
Summary and Transition .....	12
Chapter 2: Literature Review .....	13
Introduction .....	13
Literature Search Strategy .....	14
Theory of Planned Behavior (TPB) .....	14

Health Literacy.....	19
Historical Perspective .....	19
Measurements of Health Literacy .....	20
Health Literacy Policy .....	21
Health Outcomes.....	22
Physicians’ Role in Health Literacy .....	26
Health Literacy Knowledge, Experience, and Intentions .....	28
Health Literacy Training.....	31
Health Literacy Strategies.....	35
Physicians’ Gender and Health Literacy.....	38
Physicians’ Years in Practice.....	39
Physicians’ Region of Training .....	40
Summary and Transition.....	41
Chapter 3: Research Method.....	43
Introduction.....	43
Research Design and Rationale .....	43
Research Questions and Hypotheses .....	44
Methodology .....	46
Population .....	46
Sampling and Sampling Procedures .....	46
Procedures for Recruitment, Participation, and Data Collection.....	47
Instrumentation .....	47

Operationalization of Constructs .....	51
Recruitment, Data Collection, and Analyses .....	52
Threats to Validity .....	53
Ethical Consideration of Participants.....	54
Summary and Transition.....	55
Chapter 4: Results .....	56
Introduction.....	56
Data Collection .....	56
Sample Demographics .....	57
Presentation of Findings .....	57
Tests of Assumptions.....	57
Descriptive Statistics.....	60
Inferential Results .....	60
Hypothesis Testing.....	64
Summary of Findings.....	67
Chapter 5: Discussion, Conclusions, and Recommendations .....	68
Introduction.....	68
Interpretation of the Findings.....	69
Health Literacy Knowledge .....	69
Health Literacy Experience.....	72
Years in Practice .....	74
Gender.....	75

Region of Training.....	76
Intentions to Use Health Literacy Strategies .....	76
Limitations of the Study.....	78
Recommendations.....	79
Policymaking .....	79
Practice.....	81
Education .....	83
Further Research .....	84
Social Change Implications .....	85
Conclusion .....	87
References.....	88
Appendix A: Health Literacy Knowledge and Experience Survey .....	119
Appendix B: Permission to Use Health Literacy Knowledge and Experience	
Survey .....	126
Appendix C: Health Literacy Strategies Behavioral Intention Questionnaire.....	127
Appendix D: Permission to Use Health Literacy Strategies Behavioral Intention	
Questionnaire .....	130
Appendix E: St. George’s University IRB Approval.....	131
Appendix F: National Institute of Health Certificate.....	133

## List of Tables

Table 1. Correlation Coefficients Among Study Predictor Variables .....	58
Table 2. Means (M) and Standard Deviations (SD) .....	60
Table 3. Regression Analysis Summary for Predictor Variables .....	64

## List of Figures

Figure 1. Normal probability plot (P-P) of the regression standardized residuals.....59

Figure 2. Scatterplot of the standardized residuals .....59

## Chapter 1: Introduction to the Study

### **Introduction**

The focus of this study was health literacy, with specific attention to the predictors of intention to use health literacy strategies among physicians in Grenada. Burgeoning research on this phenomenon has shown significant correlations to health outcomes, especially in older adults (Batista, Lawrence, & de Sousa, 2017; Bostock & Steptoe, 2012; Wu, Moser, DeWalt, Rayens, & Dracup, 2016), and researchers are beginning to explore the role of the physician in the health literacy process (Brach et al., 2012; Lai, Goto, & Rudd, 2015; van der Heidi et al., 2018). The role of physicians is especially critical in the health literacy process because patients depend on physicians for clear communication to guide their treatment protocol, but the sparse literature has shown that physicians are either unaware of their role or overestimate their patients' understanding of conditions and treatment (Cafiero, 2013; Coleman & Fromer, 2015; Fransen, Beune, Baim-Lance, Bruessing, & Essink-Bot, 2015; Hersh, Salzman, & Snyderman, 2015; Lambert et al., 2014; Lepore et al., 2017).

Therefore, this study was an attempt to add to the limited literature on the physicians' role in health literacy and fill the gap in the literature in the Caribbean, where this topic has not been explored. The potential for positive social change from this study is clear because the results can be used not only to inform curricular changes in the region's medical schools but also to create interventions to improve physician-patient communication. Subsequently, both changes can potentially positively influence health outcomes in the region. In this study, I explored the relationships between health literacy

knowledge (HLK), health literacy experience (HLE), gender, region of training (RoT), years in practice (YiP), and intentions to use health literacy strategies among physicians in Grenada. In this chapter, I introduce the background of the study, problem statement, purpose of the study, research questions and hypotheses, theoretical foundation, list of definitions, assumptions, and limitations of the study, as well as its significance.

### **Background**

In the United States, the National Assessment of Adult Literacy (NAAL; 2003) showed that only about 12% of adults had proficient health literacy. These findings prompted the Institute of Medicine (IOM) to issue a mandate in 2004 to address the lack of health literacy among the population, the social consequences of this deficit, and the role that health professionals play in modifying some of the factors. In 2011, the results from the European Health Literacy Survey showed that 47% of the adult population had poor health literacy (as cited in Sorensen et al., 2015); the Canadian Council on Learning (2008) reported that, in 2007, 60% of Canadians had less than adequate health literacy levels; and the Australia Institute of Health and Welfare (2019) reported that 59% of their population was in the same predicament. Poorer results were reported in 14 sub-Saharan African countries, where researchers found that approximately 6 out of 10 adults had poor health literacy (McClintock, Schrauben, Andrews, & Wiebe, 2017). These statistics are indicators that the global state of health literacy are not encouraging.

The IOM's (2004) widely accepted definition of health literacy is "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (p. 37). This



definition is the one that informs many of the health literacy tools and interventions that are being used today (Baker, Williams, Parker, Gazmararian, & Nurss, 1999; Davis et al., 1993; Parker, Baker, Williams, & Nurss, 1995). However, the scope of the definition is evolving to include the role of societal systems in the health literacy process (World Health Organization [WHO], 2019).

Most research on health literacy has focused on its effects on health outcomes of various diseases, such as diabetes, hypertension, and cardiovascular disease (Al-Sayah, Majumdar, Egede, & Johnson, 2015; Bastita et al., 2018; Du et al., 2018; Mottus et al., 2014; Wu et al., 2016). The results of these studies have shown distinct correlations between poor health literacy and poor health outcomes as well as increased mortality in older adults (Mayo-Gamble & Mouton, 2018; Mottus et al., 2014). Because of the obvious role that health professionals play in the health literacy of individuals, researchers have started to explore the awareness and impact of that role. Health professionals who possess health literacy skills have been shown to display more effective physician-patient communication (Brach et al., 2012; Coleman, 2011; van der Heidi et al., 2018). Researchers have found, though, that many health professionals lack the necessary health literacy awareness, knowledge, and skills (Coleman, 2011; Coleman & Fromer, 2015; Fransen et al., 2015; Mackert, Ball, & Lopez, 2011; Seurer & Vogt, 2013).

Furthermore, there has not been adequate research that addresses the health literacy knowledge and experience of physicians and their intentions to use health literacy strategies with their patients (Brach et al., 2012; Coleman, 2011; van der Heidi et al.,

2018). The WHO (2011) noted that one of the issues in the Caribbean with regards to research was the lack of evidence-based studies. As a result, my aim in this study was to add to the body of literature on health literacy among physicians, with particular attention to physicians in Grenada. Additionally, although researchers have explored health literacy issues with Caribbean people, these studies were based on migrants to the United States and the United Kingdom, so they do not address the issue in the Caribbean itself (Brown, Avis, & Hubbard, 2007; Lubetkin et al., 2015). The scarcity of research on health literacy strategies in the Caribbean adds to the challenge of providing guidelines for best practices for healthcare professionals. Grenada is home to St. George's University, one of the largest medical schools in the Caribbean, with a current enrollment of approximately 7,800 students (St. George's University, 2018). Therefore, this study was needed because it not only fills a gap in the limited literature with regards to the role of the physician in health literacy but it can also be used to inform curricular changes relevant to teaching the tenets of health literacy to medical students and residents. In addition, medical associations can use the results of the study as a rationale to provide ongoing health literacy training with practicing physicians in Grenada and the Caribbean region.

### **Problem Statement**

In the past 20 years, there has been a modest amount of research on the relationship between health literacy and health outcomes, especially with an emphasis on the older adult population, given their challenges with multiple chronic illnesses and polypharmacy (Berkman, Davis, & McCormack, 2010; Bostock & Steptoe, 2012; Mayo-

Gamble & Mouton, 2018; Mottus et al., 2014; Wu et al., 2016). The role of the physician in health literacy is important because of the relationship with the patient, and yet there is not adequate research exploring that role in the health literacy process. In fact, there is a dearth of research on the health literacy knowledge, experience, and intentions of physicians to use health literacy strategies with their patients, and no research exists in Grenada (see Brach et al., 2012; Lai et al., 2015; van de Heidi et al., 2018). Furthermore, researchers have concluded that most health professionals are either unaware of their role in the health literacy process or have not been adequately trained in health literacy strategies (Coleman & Fromer, 2015; Lambert et al., 2014; Lepore et al., 2017). Given the significance of their role in health literacy and the influence of this role on health outcomes, there is a need for more research to understand the predicting factors that may influence physicians' intentions to use health literacy strategies with their patients.

### **Purpose of the Study**

The purpose of this quantitative study was to explore the relationship between HLK, HLE, gender, RoT, YiP, and intentions to use health literacy strategies among physicians in Grenada. This correlational study was cross-sectional in nature, and I looked at the relationship between HLK, HLE, gender, RoT, and YiP in predicting the use of health literacy strategies. A survey method was used to examine the relationships between the variables. The independent variables included HLK, HLE, gender, RoT, and YiP. The dependent variable was intentions to use health literacy strategies. This correlational study was an attempt to fill the gap in the literature on intentions to use health literacy strategies among physicians in Grenada.

## **Research Questions and Hypotheses**

Research Question #1: To what extent is health literacy knowledge, as measured by the Health Literacy Knowledge and Experience Scale Revised (HLKES-2), related to intentions to use health literacy strategies, as measured by the Health Literacy Strategies Behavioral Intentions (HLSBI) questionnaire, among physicians in Grenada?

*H<sub>01</sub>*: There is no significant relationship between health literacy knowledge and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>11</sub>*: There is a significant relationship between health literacy knowledge and intentions to use health literacy strategies among physicians in Grenada.

Research Question #2: To what extent is health literacy experience, as measured by the HLKES-2, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>02</sub>*: There is no significant relationship between health literacy experience and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>12</sub>*: There is a significant relationship between health literacy experience and intentions to use health literacy strategies among physicians in Grenada.

Research Question #3: To what extent is gender, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>03</sub>*: There is no significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>13</sub>: There is a significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

Research Question #4: To what extent is region of training, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>04</sub>: There is no significant relationship between region of training and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>14</sub>: There is a significant relationship between region of training and intentions to use health literacy strategies among physicians in Grenada.

Research Question #5: To what extent is years in practice, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>05</sub>: There is no significant relationship between years in practice and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>15</sub>: There is a significant relationship between years in practice and intentions to use health literacy strategies among physicians in Grenada.

### **Theoretical Foundation**

The theoretical basis for this study was Ajzen's (1985) theory of planned behavior (TPB). This theory, which is an extension of the theory of reasoned action (TRA; Fishbein & Ajzen, 1975) has been used to examine physicians' intentions to provide informational and instrumental support to their patients (Askelson et al., 2011; Kiyang et al., 2015; Nantha, Wee, & Chan, 2018; Wheeler & Bутtenheim, 2013). It is based on the

premise that while attitudes, subjective norms, and behavioral intention are the basic determinants of behavior, an individual's perceived control over executing a behavior can be used to explain variance in intention as well as predict whether the behavior will occur (Glanz, Rimer, & Viswanath, 2015). Additionally, one of the major tenets of the TPB is that the intention that guides behavior is based on the attitudes towards the behavior and the social norms that govern that behavior (Glanz et al., 2015). As a result, in this study, the TPB was used to inform physicians' intentions to use health literacy strategies with their patients. A more detailed coverage of the TPB research is addressed in Chapter 2.

### **Nature of the Study**

The nature of the study was quantitative using a cross-sectional survey design in which I examine possible relationships between the independent variables and the dependent variable by sampling a cross-section of the population at one point in time, as opposed to over a long period of time (see Creswell, 2013). Self-administered surveys were used to ensure a high response rate and to reduce the likelihood of social desirability bias (see Groves et al., 2009). The independent variables for this study were HLK, HLE, gender, RoT, and YiP of physicians in Grenada. The dependent variable was intentions to use health literacy strategies among physicians in Grenada. The sampling frame for this study was the list of all registered physicians in Grenada and was obtained from the Grenada Medical Association. Nonprobability sampling was used to obtain data from all physicians who are registered to practice in Grenada.

## Definitions

*Gender:* Gender is defined as identifying as either male or female (Walker, Howe, Dunkerley, Deupree, & Cormier, 2019).

*Health literacy experience:* Health literacy experience is the use of strategies and techniques in clinical practice (Cormier & Kortlik, 2009).

*Health literacy knowledge:* Health literacy knowledge is knowing the basic tenets of health literacy as well the strategies and techniques to use to improve patients' health literacy (Cormier & Kortlik, 2009).

*Intentions to use health literacy strategies:* Intentions to use health literacy strategies is the readiness to use health literacy strategies to improve health literacy in patients (Cafiero, 2013).

*Region of training:* Region of training is defined as whether the physician was trained in the Caribbean or outside of the Caribbean (Walker et al., 2019).

*Years in practice:* Years in practice are the number of years that the physician has practiced medicine (Walker et al., 2019).

## Assumptions

There were several assumptions that I made regarding this study. First, by using web-based and written surveys, I assumed literacy of the participants because they were physicians. Second, I assumed that they would respond to the health literacy knowledge items without referring to health literacy resource materials. Third, I assumed that they were honest in their responses regarding their health literacy experiences. Finally, I

assumed that the chosen survey instruments were aligned with the theoretical constructs that I was measuring.

### **Scope and Delimitations**

Based on evidence from the literature, there is a significant relationship between the health literacy of patients and their health outcomes (Batista et al., 2017; Du et al., 2018; May et al., 2018; Mottus et al., 2014). Furthermore, physicians play a vital role in the health literacy of their patients (Fransen et al., 2015; van der Heidi, 2018). Thus, the focus of this study was on the predictors of intentions to use health literacy strategies among physicians in Grenada in an effort to examine any correlation between the variables. I did not attempt to establish causation between the variables, which should limit any threats to internal validity.

This study was limited to registered physicians in Grenada, and physicians employed in academia but not engaged in clinical practice were excluded. Subsequently, this delimitation affected the generalizability of the results to all physicians in Grenada and those outside of Grenada. Further, the use of the survey method did not allow the opportunity for participants to ask for clarification.

### **Limitations**

The use of the survey method of data collection had several advantages, such as low cost and time-saving, and it also had the potential to decrease social desirability response bias as participants may want to portray themselves in the best light, which can affect the validity of the study. The exploration of health literacy among physicians may be considered a sensitive topic as it may be perceived as questioning a physician's work



ethic or ability, and as such, anonymity may decrease the urge to give socially desirable responses (see Tourangeau & Yan, 2007). Another potential limitation was the response rate of the sample, as a less than optimal response rate is a threat to the validity of the study. Finally, as this study is a correlational one, I was not be able to describe any causal relationships from the data.

### **Significance**

Given the significant relationship that exists between patients' health literacy, their health outcomes, and the role that physicians play, it is important to understand whether physicians are aware of this role (Coleman & Fromer, 2015; Fransen et al., 2015; Hersh et al., 2015). In addition to awareness, it is also necessary to ascertain whether they have health literacy knowledge and intentions to use that knowledge in their practice. Exploration of the limited literature revealed that physicians are not only unaware but they also have not been adequately trained in health literacy knowledge and strategies (Hedelund-Lausen et al., 2018; van der Heidi, 2018). From this study, I provided insight into some of the predictors that drive the intentions to use health literacy strategies among physicians in Grenada. The results add to the growing body of knowledge on this topic, and they can be used to inform medical school curricular changes and interventions for practicing physicians. The implications for potential positive social change are two-fold. First, the inclusion of health literacy as an integral part of medical school curricula has been shown to provide medical students with the requisite knowledge and opportunity to building their health literacy skills (Brann & Bute, 2017; Coleman, Peterson-Perry, & Bumsted, 2016). Second, these interventions can assist practicing physicians in

enhancing the physician-patient communication. This can enable patients not only to understand what is required to make informed health decisions but to be comfortable enough to ask questions in the therapeutic setting. Improving this relationship improves health literacy, which positively affects health outcomes (Bahri, Saljooghi, Noghabi, & Moshki, 2018; Hedelund-Lausen et al., 2018).

### **Summary and Transition**

There is a significant relationship between health literacy and health outcomes, and, given the nature of the relationship between physician and patient, the role of the physician in the health literacy process is one that needs exploration. The goal of this study was to add to the limited literature on the predictors of intentions to use health literacy strategies with patients, particularly with physicians in Grenada. In Chapter 2, a literature review of health literacy, its effect on health outcomes, and the role that physicians play in the process is provided. A detailed explanation of the TPB and how it applied to this study is also provided.

## Chapter 2: Literature Review

### **Introduction**

The purpose of this study was to explore the relationship between health literacy knowledge, health literacy experience, gender, region of training, years in practice, and intentions to use health literacy strategies among physicians in Grenada. Health literacy is an important influence in the health outcomes of all individuals and depends largely on communication and interaction with the healthcare system (Lee, Rhee, Kim & Ahluwalia, 2015). Despite this importance, the Centers for Disease Control and Prevention (2017) reported that nine out of 10 adults are below the basic level of health literacy needed for effective management of their health. Further, researchers have shown that healthcare professionals are either unaware of their role, underestimate their responsibility, or overestimate patients' abilities to participate in the health literacy process (Cafiero, 2013; Coleman & Fromer, 2015; Fransen et al., 2015; Hersh et al., 2015; Lambert et al., 2014; Lepore et al., 2017). A possible cause of this problem is the lack of health literacy knowledge and experience among physicians. In the review of the literature, I found no research on the physician's role of health literacy in the Caribbean specifically, and the role of the physician in other parts of the world has not been widely explored. Therefore, in this chapter, I examine not only the physician's role but also that of other health professionals, such as nurses, to emphasize the importance of health literacy in the health outcome of patients. I also provide an overview of health literacy, as well as a description of the TPB that informed this study.

### **Literature Search Strategy**

To ensure that this literature review was exhaustive, I used Walden's Library *Search Everything* and Thoreau. In addition, based on advice from the librarian, I narrowed my search to all the psychology and health sciences databases. This allowed me to access all articles from PsychINFO, PsycARTICLES, CINAHL, MED-LINE, and Academic Search Complete. The first pass at the literature allowed me to gain a historical view of health literacy and the trends in the health profession. It also provided background on the TPB and its use in studies that addressed intentions to change. Further exploration allowed me to narrow my search within the past 5 years to provide a current literature review. The main search terms that I used included *health literacy, physician health literacy experience, physician health literacy knowledge, physician education, physician training OR doctor training, physician gender AND health literacy, theory of planned behavior AND health psychology, health care psychology, nurses AND health literacy, and nurses AND intentions to use health literacy*. Although an extensive literature search yielded information that was older than 10 years, this information was used only to provide context and only when it was relevant to the theoretical framework. For example, Ajzen's (1985) TPB is critical to this study and is dated in the 1980s.

### **Theory of Planned Behavior (TPB)**

The theoretical basis for this study was Ajzen's (1985) TPB because of its applicability to behavioral intentions of health care professionals (Askelson et al., 2011; Cafiero, 2013; Kiyang et al., 2015; Nantha et al., 2018). It is important to note that two earlier theories, the information integration theory (IIT; Anderson, 1971) and the theory

of reasoned action (TRA; Fishbein & Ajzen, 1975) contributed to the development of the TPB. In 1971, Anderson developed the IIT which explored how the integration of new information with existing knowledge impacts how attitudes are created and changed. Anderson (1971) posited that individuals apply value and weight to every piece of information, where value is an evaluation of its favorability, and weight is the perceived relevance to the individual. Therefore, when new information is evaluated and weighted, it is integrated with existing information to form a new attitude that influences behavior. It should be noted that Anderson did not consider the influence of behavioral intention on behavior, and that limitation was addressed by Fishbein and Ajzen (1975) with the TRA.

The TRA was based on the premise that attitudes, subjective norms, and behavioral intention are the basic determinants of behavior, with the assumption that behavioral intention is the most important factor in determining behavior (Fishbein & Ajzen, 1975). Subsequently, the TPB was developed as an extension of the TRA to include an individual's perceived control over executing a behavior, which also helps to influence intention. Both theories are based on the assumptions that individual motivational factors determine whether a behavior will occur, and that the best predictor of that behavior is intention. Furthermore, the intention is based on the attitudes towards the behavior and the subjective norms that govern that behavior (Glanz et al., 2015). These attitudes are primarily influenced by individuals' beliefs about whether the outcomes of the behavior are positively or negatively valued. The subjective norms are similarly determined by individuals' normative beliefs about whether the behavior is supported by their social environment (Glanz et al., 2015). The inclusion of perceived

control in the TPB considers individuals' beliefs about their control over their ability to perform the behavior, after considering the facilitators and barriers to performance (Ajzen, 1985).

The TPB sparked a robust body of research since its development in 1985, and its versatility in cross-cultural research is noteworthy as the literature review yielded studies not only from North America but also from Asia, Africa, and Europe (Baumann et al., 2015; Carvajal, Goia, Mudafort, Brown, & Barnett, 2017; Kiene, Hopwood, Lule, & Wanyenze, 2014; Lee, Chiang, Hwang, Chi, & Lin, 2016). It has provided the framework to explain not only variance in intention but also to predict a diverse array of health behaviors that include smoking, contraceptive use, seatbelt use, exercise, and alcohol use (Baumann et al., 2015; Bhochhibhoya & Branscum, 2018; Carvajal et al., 2017; Lee et al., 2016; Gwon, Yan, & Kulbok, 2017; Hasking & Schofield, 2015; Kiene et al., 2014; Ledesma, Tosi, Diaz-Lazaro, & Poo, 2018; Linder, Harper, Juny, & Woodson-Smith, 2017). Further, these studies have employed different research methods that include quantitative, qualitative, and mixed methods. For example, Lee et al. (2016) used a quantitative cross-sectional survey design to investigate the degree to which pregnant women intended to exercise, and Carvajal et al. (2017) grounded a qualitative study in the TPB to explore the perspectives of contraceptive decision making among Latinas in Baltimore.

With regard to the applicability to this study, the TPB has been effective in studies that used a variety of health professionals, including physicians. For example, it has been used to examine physicians' intentions to provide informational and

instrumental support to their patients, which is a key component of health literacy (Askelson et al., 2011; Kam, Knott, Wilson, & Chambers, 2012; Kiyang et al., 2015; Nantha et al., 2018; Wheeler & Buttenheim, 2013). Askelson et al. (2011) found that attitudes, subjective norms, and perceived behavioral control significantly influenced physicians' intentions to discuss sex with 9 to 15-year-old girls. This significant correlation was corroborated by other researchers, such as Nantha et al. (2018), who found that attitudes and subjective norms were significant predictors of physicians' intentions to offer sick leave to their patients, and Kam et al. (2012) discovered the same predictors when investigating health professionals' intentions to refer oncology patients for psychosocial support. Kiyang et al. (2015) found that perceived behavioral control was the strongest predictor of family physicians' intentions to help women in the decision-making process of cancer screening mammography.

Furthermore, the constructs of the TPB have also been used to understand health care professionals' intentions to use health literacy strategies in their clinical practice as well as to explore the role that perceived behavioral control plays in their intentions to provide innovative care (Cafiero, 2013; Shamblen et al., 2018; Wilson, White, & Hamilton, 2013). Shamblen et al. (2018) specifically explored how the constructs of the TPB related to health professionals and their intentions to use integrative health approaches with veteran patients. They reported that perceived behavioral control was most significantly related to intentions and subjective norms had the weakest relationship (Shamblen et al, 2018). In contrast, using psychologists as their population of interest, Wilson et al. (2013) explored intentions to use complementary and alternative therapies

in their practice and found that perceived behavioral control did not have a direct impact, but subjective norms and attitudes had significant influence on intentions. In addition, researchers have used the TPB in the development of tools to predict intentions among health care professionals. Cafiero (2013) created the HLSBI, which has been used to predict intentions with a variety of health professionals, and which was used in this research study. Similarly, Flowers, Freeman, and Gladwell (2017) used the framework of the TPB to develop three questionnaires to assess attitudes, subjective norms, perceived behavioral control, and intentions toward green exercise. These studies provide evidence to support the decision to use the TPB to explore predictors of intentions among physicians in Grenada.

Other theories, such as the social cognitive theory and health belief model have also been used extensively to investigate the determinants of health behavior change from both patients and health care providers' perspectives (Chou & Shih, 2018; Domigan, Glassman, Mulrow, Reindl, & Diehr, 2014; Greiner, Croff, Wheeler, & Miller, 2018; Jahan & Henary, 2013; Pesseau et al., 2014). Despite the role that self-efficacy plays in perceived behavioral control, these theories are not a good fit for this study because unlike the TPB, they do not consider the role of intentions on behavior. It is for this reason that the TPB was the best theoretical fit for this study as the research questions addressed the predictive relationships between health literacy knowledge, experience, gender, region of training, years in practice and intentions to use health literacy strategies among physicians in Grenada.



## **Health Literacy**

### **Historical Perspective**

The definition of health literacy has undergone some significant changes and has not been consistent in the literature. The earlier definitions were unclear, not operationally defined, and guided by the priorities of the researchers. The earlier focus was primarily on the “ability to apply basic reading and math skills in a health care context” (Berkman et al., 2010, p. 12). In fact, a systematic review of the literature from 1999 to 2010 by Berkman et al. (2010) yielded 13 different definitions of the construct. For the purposes of this study, the definition adopted by the IOM (2004) is used, which stated that “health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (p. 37). It is important to note that the definition is still evolving as researchers seek to include the role that systems, such as education and society as a whole, play in health literacy (Van den Broucke, 2014; WHO, 2016).

In the United States, the issue of literacy was re-emphasized by the National Literacy Act of 1991 when Congress attempted to improve the literacy skills of adults in the country. Despite their best efforts, in 1993 the National Adult Literacy Survey (NALS) revealed that approximately 90 million Americans were still functionally illiterate, and unable to understand complex information (National Center for Education Statistics, n.d.). Further, in 2003 the results of the National Assessment of Adult Literacy (NAAL) showed that only about 12% of adults had proficient health literacy (NAAL, 2003). This national assessment was the first of its kind to measure health literacy in all

adults in the United States, and provided the catalyst for research on health literacy. As a result, in 2004 the IOM convened a committee on health literacy to not only define the concept but to also set goals and implement strategies to improve its impact on health. Furthermore, the statistics on health literacy in other parts of the world show similar deficits in various populations. The results from the European Health Literacy survey showed that 47% of the adult population had poor health literacy (Sorensen et al., 2015), and the Canadian Council on Learning (CCL, 2008) reported that 60% of Canadians have less than adequate health literacy levels. Similarly, the Australia Institute of Health and Welfare (2019) reported having about 59% of their population having less than adequate health literacy, and poorer results were reported in 14 sub-Saharan African countries where researchers found that approximately 6 out of 10 adults had poor health literacy (McClintock et al., 2017).

### **Measurements of Health Literacy**

In the United States, the health literacy component of the NAAL is considered the first and only comprehensive measure of health literacy which provided information to both the education and health systems, and helped to identify major disparities regarding race and ethnicity (NAAL, 2003). This measure does not provide an individual assessment of health literacy which can be used to inform interventions to ameliorate the impact of an inadequate level of health literacy. As such, several measures have been developed to assess health literacy and currently include the Rapid Estimate of Adult Literacy in Medicine (REALM; Davis et al., 1993), Test of Functional Health Literacy in Adults (TOFHLA; Parker, Baker, Williams, & Nurss, 1995), Short Test of Functional

Health Literacy in Adults, (S-TOFHLA; Baker, Williams, Parker, Gazmararian, & Nurss, 1999), and Newest Vital Sign (NVS; Weiss et al., 2005). As the importance of health literacy has gained traction worldwide, these assessments also have different versions to accommodate various ethnic groups. Notably, there are some who believe that these are merely health literacy screening tools, and that effective measuring tools need to be developed but these efforts may also be hindered by the broad definitions of health literacy that exist (McDonald & Shenkman, 2018).

### **Health Literacy Policy**

The recognition of the impact of proficient health literacy is not limited to the United States. The United Nations (UN) and the WHO issued a mandate in 2009 to raise the level of health literacy worldwide. Furthermore, in 2016 the 2030 Agenda for Sustainable Development in the Shanghai Declaration included efforts to increase levels of health literacy in order to reduce health disparities and improve health outcomes (WHO, 2016). A policy analysis by Trezona, Rowlands, and Nutbeam (2018) included health literacy policies from six countries in three WHO regional groupings: Australia, Austria, China, New Zealand, Scotland, and the United States. The common thread among these countries was the recognition of the need for national health literacy policies and strategies that ranged from the governmental to the individual level. Of these six countries, only China has implemented an annual population health survey to assess outcomes, while Austria and the United States are using baseline data from the European Health Literacy Survey and the NAAL, respectively. Further, the Government of

Australia planned to conduct a population survey at the end of 2018 with plans to monitor future changes.

### **Health Outcomes**

Researchers have established clear correlations between health literacy and health outcomes, specifically that low health literacy is strongly associated with poor health outcomes (Batista et al., 2017; Du et al., 2018; May et al., 2018; McDonald & Schenkman, 2018; Mottus et al., 2014). McDonald and Schenkman (2018) found that low health literacy was linked to increased hospitalizations, lower use of preventative measures such as vaccines and screenings, and higher mortality rates. May et al. (2018) also reported that low parental health literacy influenced child health by inaccurate medication dosing and increased use of the emergency room for acute, non-urgent care. Furthermore, there are certain groups that are more vulnerable to this status, such as the elderly, poor, less-educated, and minorities, in general. Many members of these populations are unable to read or understand their prescriptions properly which leads to poor medical compliance and ineffective treatment that contributes to high mortality rates (Mayo-Gamble & Mouton, 2018; Mottus et al., 2014). In particular, given the increased life expectancy there are more individuals living longer while managing two or more chronic illnesses, such as diabetes, hypertension, and cardiovascular diseases. In fact, the CDC (2015) reported that approximately 50% of the older population have multiple chronic conditions of which they have little understanding about their symptoms and treatment. This lack of understanding is strongly associated with poor health literacy which the NAAL (2003) reported as below basic level for over 70% of the older adult

population in the United States. As a result, researchers suggested that poor health literacy can be a death sentence for an older adult because those with “low health literacy are twice as likely to die within five years as compared to adults with no health literacy limitations” (Bostock & Steptoe, 2012, p. 4). Additionally, Oliveira, Bosco, and di Lorito (2019) reported a statistically significant relationship between poor health literacy and higher dementia risk. This finding was based on a systematic review of prospective cohort studies between 2014 and 2018, and the researchers emphasized the need for health care professionals to consider patients’ health literacy when planning dementia risk reduction. Further, Geboers et al. (2018), based on a longitudinal study, reported that there was a greater likelihood of cognitive decline in individuals with poor health literacy, and reciprocally poor health literacy increases the risk of cognitive decline.

Geboers, de Winter, Spoorenberg, Wynia, and Reijneveld (2016) explored the association between health literacy and self-management abilities (SMA) using the Brief Literacy Screening and the Self-Management Ability Scale with 1,052 randomly selected older adults in the Netherlands. They found that low health literacy is significantly associated with poor SMA of older adults. The researchers reported an unexpected finding in that there was a greater deficiency in SMA among the medium and higher educated older adults, as opposed to the lower educated ones. As this finding is not typical of what is in the literature, the researchers suggested that a reason for this may be the under-representation of lower educated older adults in their study. Nevertheless, they maintain that this group is still considered more vulnerable because of the strong association between low health literacy and low education level (Das, Mia, Hanifi,

Hoque, & Bhuiya, 2017; Mottus et al., 2014; Paasche-Orlow, Parker, Gazmararian, Nielsen-Bohlman, & Rudd, 2005).

The relationship between health literacy and quality of life has also been explored in other parts of the world, such as Europe, Asia, and Australia. The results of a systematic review and meta-analysis that included 12,303 subjects from the United States, China, and other parts of Asia, conducted by Zheng et al. (2018) showed a moderate correlation between health literacy and quality of life. Furthermore, they found that while the correlation was lower among college students, it was higher among patients with cardiovascular diseases. Similar findings were reported in a study from the Republic of Srpska, Bosnia, and Herzegovina conducted by Todorovic et al. (2019) who found that low health literacy was significantly associated with chronic illnesses, older age, rural living, and lower levels of education. A longitudinal study of 575 older adult patients with heart failure (HF) conducted by Wu et al. (2016) showed that health literacy is a mediator in the relationship between health outcomes and age in this population. Particular attention has been paid to other chronic illnesses, such as hypertension and diabetes, with similar results. Several researchers have reported that low health literacy was strongly associated with limited diabetes knowledge, and diabetic patients who had low health literacy found it difficult to understand prescription instructions, thus affecting compliance (Binh, Phuong, & Nhung, 2015; Caruso et al., 2018; Mehzabin, Hossain, Moniruzzaman, & Sayeed, 2019; Singh, Acharya, Kamath, Ullal, & Urval, 2018). Studies on hypertension yielded similar results of significant correlations between hypertensive patients with limited health literacy and knowledge and management of their condition

(Batista et al., 2018; Chajae, Pirzadeh, Hasanzadeh, & Mostafavi, 2018; Javadzade, Larki, Tahmasebi, & Reisi, 2018; Wang, Lang, Xuan, Li, & Zhang, 2017; Yilmazel & Cetinkaya, 2017). Further, Ousseine et al. (2018) found that the distress experienced by patients suffering from myelodysplastic syndrome (MDS) was more related to poor health literacy and lack of communication with their physician than to the MDS symptoms.

Research conducted in the Caribbean in Jamaica, Guyana, and Barbados, though limited, showed comparable results to other parts of the world. Researchers reported that elderly men with chronic illnesses and limited health literacy had poor health-seeking behaviors, and there was a significant relationship between patients with low health literacy and undiagnosed diabetes (Bourne et al., 2010; McNaughton, Korman, Kabagambe, & Wright, 2015; Morris, James, Laws, & Eldemier-Shearer, 2011). Additionally, a case study in Barbados that looked at the implications of health literacy and type 2 diabetes showed that diabetic patients with low health literacy scores found it difficult to understand instructions for managing the disease thus affecting their overall health (Quimby-Worrell, 2019).

Singh and Aiken (2017) conducted a quantitative study with diabetic patients in a health clinic in Jamaica that served a population of approximately 50,000, and presented contrasting results to what has been reported in the previously mentioned studies. They found that although there was a significant relationship between limited health literacy, older adulthood, and lower educational status, which is consistent with the literature, there was no significant association between health literacy level and health outcomes of

this group. Al-Syah et al. (2015) observed similar results in a low-income African-American population with Type 2 diabetes, and reported that there was no association between health literacy and the cardiometabolic indicators of diabetes (A1c, blood pressure, or body mass index). They suggested that a possible reason may be higher levels of social support from family and friends among this demographic. Hahn et al. (2015) supported this suggestion. They found no direct relationship between health literacy and diabetes self-care, but a direct effect of health literacy on social support which impacted diabetes self-care (Hahn et al., 2015).

### **Physicians' Role in Health Literacy**

The IOM published ten clear attributes of health literate organizations to guide the physicians' roles in improving health literacy and the recognition of the importance of changes in every aspect of the health care system (Brach et al., 2012). These attributes covered every aspect of health literacy from training providers, using strategies in the clinical setting, and advocating for awareness throughout every level of health organizations. Researchers caution that not only should health literacy be explored at the individual level but also at the policy, education, and health systems level. This multi-pronged approach is vital in order to facilitate changes in all aspects of health literacy (Lai et al., 2015; Van den Broucke, 2014; van der Heidi et al., 2018). In addition, because poor health literacy is considered a barrier to help-seeking behaviors in the health care system, it is important that health professionals are aware of the role that they play in this process. The importance of health professionals having adequate health literacy awareness, knowledge, and skills has been emphasized in the literature (Brach et al.,



2012; Coleman, 2011; van der Heidi et al., 2018; Williams, Davis, Parker, & Weiss, 2002). Research shows that one of the main deficiencies in health literacy is the lack of awareness among physicians about their role in improving health literacy in their patients (Coleman & Fromer, 2015; Fransen et al., 2015; Wahab et al., 2018).

In recent years, the role of the physician in improving health literacy among patients has received some attention in the literature. Ousseine, Durand, Bouhnik, Smith, and Mancini (2019) explored the necessary factors in order to achieve shared decision-making between physicians and patients. They found that the main factor was physicians' support in patients attaining high levels of health literacy. Coleman (2011), and Mackert, Ball, and Lopez (2011) reported that many health professionals lack the requisite health literacy awareness, knowledge, or skills, and McCleary-Jones (2016) found a marked disparity in the health literacy knowledge base among nurses because of the inconsistencies in training protocols. The results of a survey conducted by Seurer and Vogt (2013) showed that 77% of physicians thought that their patients had at least a moderate level of health literacy, but none of them formally tested their patients to ascertain their health literacy level. In addition, only 21% of the respondents ensured that the education materials that they provided were at the recommended 6<sup>th</sup> grade level. Another common misconception that is noted throughout the literature is that physicians report that they can observe the health literacy level of their patients during an office visit (Seurer & Vogt, 2013). This mistake typically leads to physicians over-estimating the health literacy level of their patients especially that of minority patients, and as such either do not use health literacy strategies with them or provide patients' education that is

incongruent with their needs (Goggins, Wallston, Mion, Cawthorn, & Kripalani, 2016; Hedelund-Lausen et al., 2018; Wahab et al., 2018). In an effort to eliminate this mistake, Hedelund-Lausen et al. (2018) suggested that practitioners should not only identify patients with low health literacy skills but help to build their levels of health literacy in recognition of the consequences of having poor health literacy.

### **Health Literacy Knowledge, Experience, and Intentions**

Despite the increased research in health literacy and the role of the health professional, there has not been adequate research about the health literacy knowledge and experience of physicians or their understanding of the health literacy barriers faced by their patients (Lambert et al., 2014). A review of the literature showed that many physicians lack health literacy knowledge which can adversely impact the physician-patient communication and are generally unfamiliar with the concept (Coleman & Fromer, 2015; Fransen et al., 2015; Hedelund-Lausen et al., 2018). Older studies showed that resident physicians assumed that they could identify patients with poor health literacy simply by clinical interactions (Bass, Wilson, Griffith, & Barnett, 2002; Rogers, Wallace, & Weiss, 2006). Residents classified 10% of the patients as having health literacy issues, but after investigators screened all patients using the REALM-R, results showed that 36% had poor health literacy (Bass et al., 2002). Similarly, Rogers et al. (2006) found that family-medicine residents were not able to correctly identify all patients with poor or marginal health literacy. After all patients were tested with the S-TOFHLA, the results showed that the residents were only able to identify half of the patients with health literacy deficits.

Newer studies did not show much improvement (Hedelund-Lausen et al., 2018; Lambert et al., 2014; Rajah, Hassali, & Lim, 2017; Wahab et al., 2018). In a qualitative study using in-depth, semi-structured interviews, and one focus group, Lambert et al. (2014) interviewed health professionals in four indigenous health care services that specifically dealt with CVD patients. Overall, they found that participants had limited knowledge of health literacy, and were unaware of the effects of health literacy on health. These results were similar to the findings reported by Hedelund-Lausen et al. (2018) in that general practitioners (GPs) had not only a limited health literacy knowledge but also little to no health literacy training or experience. Further, in a study with internal medicine residents, Wahab et al. (2018) found that the residents predicted 12.5% of the patients with low health literacy as compared to 97% that were assessed as inadequate health literacy using the REALM-R. Rajah et al. (2017) reported similar results from a cross-sectional study of 526 health care professionals in Malaysia. They found that approximately 34% had limited knowledge, and more than 50% had a negative attitude toward health literacy.

Conversely, based on the results of a survey of 333 health care providers, Schlichting et al. (2007) reported that 96% of participants used health literacy strategies with their patients, but most did not formally assess for health literacy. In addition, 78% did not receive any training in health literacy, and 62% did not consider health literacy as a barrier or to be high priority when compared to other patient needs. This particular finding is not uncommon as Myers and Murray (2019) stated in reference to overcoming health literacy barriers, that many physicians miss notable red flags that indicate low

health literacy. Some of these patients' behaviors include frequently missed appointments, incomplete forms, and forgotten glasses. Given that health literacy knowledge among physicians seems to be limited, it is not surprising that experience is also lacking. Harrington and Engelke (2016) explored a convenience sample of pediatric nephrology professionals and found that although they understood the need for health literacy, they had very little experience and wanted the opportunity to learn. Moreover, consistent with other studies, 67% of them felt that health literacy could be assessed without screening measures. In Australia, an encouraging quantitative study by Joshi et al. (2014) with 739 patients showed that the 48% with poor health literacy reported receiving tailored information about lifestyle changes from their general practitioners (GPs). The researchers concluded that this was an indication that GPs were not only identifying patients with limited health literacy but also employing strategies to help them. Koo, Horowitz, Radice, Wang, and Kleinman (2016) reported similar findings from nurse practitioners in the dental field. The researchers found that approximately 76% of the participants believed that health literate communication was effective and used it consistently with their patients. However, they noted that these participants took patient-focused communication training beyond their tertiary education.

There is some literature on intentions of nursing professionals to use health literacy strategies with their patients (Cafiero, 2013; Mackert, Ball, & Lopez, 2011; Sharifirad et al., 2015) and some research has been done with physicians (Garcia-Retamero, Wicki, Cokely, & Hanson, 2014; Kiyang et al., 2015; Lewis et al., 2014; Nantha et al., 2018; Javadzade et al., 2018). Cafiero (2013) reported that although there

were significant health literacy knowledge deficits, such as screening techniques, among nurse practitioners, the intentions to use health literacy strategies were strong. Cafiero (2013) further noted that this willingness can serve as the impetus for providing training for nurse practitioners and health professionals, in general. In a cross-sectional study with physicians and other health care professionals, Lewis et al. (2014) found that physicians were less likely to use a variety of communication methods and were not as culturally competent as their counterparts; however, they acknowledged the need for health literacy training. Garcia-Retamero et al. (2014) explored predictors of surgeons' roles in patient interaction. They found that although the participants reported a preference for shared decision making in the physician-patient relationship, they were not adequately equipped to use that approach. Further, the researchers reported that gender, length of experience, and culture were factors that limited their ability to be more collaborative.

### **Health Literacy Training**

An important consideration in health literacy knowledge of physicians is training and whether they are exposed to the health literacy concepts during medical school, residency, or as continuing medical education (CME). Researchers suggested that physicians, medical students and residents lack the requisite health literacy training (Coleman & Fromer, 2015; Hedelund-Lausen et al., 2018; Mackert, Ball, & Lopez, 2011; Wahab et al., 2018). Further, based on the results of a systematic review Saunders, Palesy, and Lewis (2019) found that health literacy training was under-developed in the health professions education arena. They suggested not only the need for a health literacy definition specific to the health professions education field but also targeted curricula and

on-the-job opportunities. Coleman and Appy (2012) conducted a cross-sectional survey study of the deans of medical education at all 133 US allopathic schools who are registered with the Association of American Medical Colleges (AAMC). Of the 61 completed surveys, the results showed that 72% of the schools had health literacy in the curricula, with most of them using lecture-based delivery and less than half using role-playing or SPs. Different standards seem to be applied across specialties as Ali (2013) reported that health literacy was not offered consistently as a part of the curricula of community-based internal medicine residency programs. Ali, Ferguson, Mitha, and Hanlon (2014) also found that medical trainees do not feel confident in using health literacy skills because they were not adequately trained. To this end, Brann and Bute (2017) asserted that the inclusion of informed decision-making practices should be included in the training of medical residents. This assertion was based on their study using 40 patient encounters with residents and SPs regarding early pregnancy loss. The results showed that although some residents used minimal informed decision-making, most of them did not give patients information on pain management or addressed their concerns.

Evidence from the nursing literature points to similar deficits in health literacy training. Mosley and Taylor (2017) reported that few nursing schools include health literacy in the curriculum. They emphasized that health literacy should be an integral part of the nursing students' education given the role that they play in the health literacy of their patients. Erunal, Ozkaya, Mert, and Kucukguclu (2018) further noted that although 50% of the nursing students that they surveyed had adequate health literacy, that

percentage is very low. They also suggested the need to integrate health literacy training throughout the curricula so that nursing students are exposed to the concept from the beginning of their education.

In contrast, Coleman, Nguyen, Garvin, Sou, and Carney (2016) found that 42% of family-medicine residency programs included health literacy in the curricula, and most directors agreed that health literacy was a necessary part of clinical skills training. The authors cautioned that the self-report survey may have been subject to response bias and thus may reflect an overestimation of the prevalence of health literacy in the curricula. Other studies show that some efforts are being made to incorporate health literacy in the medical school curricula, as is the case with two schools in Chicago. University of Chicago Pritzker School of Medicine and Northwestern University Feinberg School of Medicine have both integrated health literacy in the communication skills component of the curricula, using didactic lectures, videos, and interactive simulated patients with the teach-back method (Harper, Cook, & Makoul, 2007). Green, Gonzaga, Cohen, and Spagnoletti (2014) used a pre-post study design to assess the impact of health literacy training with medical residents at the University of Pittsburgh. The researchers reported significant improvement in health literacy skills, especially with the use of plain language. Similar results were reported by Roberts et al. (2012) who examined the effectiveness of the implementation of health literacy in the curriculum at University of Louisville School of Medicine. They found a significant increase in health literacy knowledge at the end of the first year, but noted that they did not collect baseline health literacy knowledge of the students which would have strengthened the evaluation.

Researchers agree that clear communication between the physician and patient is one of the ways to ameliorate poor health literacy (Coleman, 2011; Coleman et al., 2016; Pagels et al., 2015). Several methods have been found to improve this communication and are strongly recommended as a part of medical school curricula and CME. These methods include didactic teaching, small group exercises, role plays, video review, SPs, direct observation, and feedback (Coleman, 2011). In addition, Schmidt, Schopf, and Farin (2017) advocated for the use of focus groups that included patient advocates to share their health care provider experiences, as well as patient testimonials. Although some of these methods have not been adequately evaluated, the schools that do include health literacy in the curricula typically include a combination of didactic and experiential methods (Coleman, 2011; Coleman et al., 2016). Further, Coleman, Peterson-Perry, and Bumsted (2016) suggested that health literacy training with medical students should be done in an integrated or extended format as opposed to a one-time lecture. Regarding the use of SPs, May, Park, and Lee (2009) conducted a literature review from 1996 to 2005. They observed that most studies stated that the use of SPs was effective but found that research designs were weak, and advocated for more rigorous designs. Furthermore, Pagels et al. (2015) found that the use of didactic lectures and SPs as part of health literacy training with family-medicine residents resulted in a significant increase in health literacy knowledge. In fact, when this group was surveyed three months later, 77% were still using the teach-back method.



## **Health Literacy Strategies**

Doak, Doak, and Root (1996) published *Teaching Patients with Low Health Literacy Skills* which became the main resource used by health care professionals. Subsequently, in 2007, DeWalt proposed a framework for health literacy interventions that involves not only the physician-patient interaction but also that of the health system and the community as a whole. Furthermore, health literacy research has expanded into creating measurement and screening tools for identification of poor health literacy, and investigating the effects of poor health literacy on health outcomes (Cafiero, 2013; Davis et al., 1993; Parker et al., 1995; Weiss et al., 2005). With the shift from a paternalistic approach to a patient-centered one, it was also necessary to develop strategies that provided the patients with more autonomy (Magnezi, Bergman, Urowitz, 2015).

Health literacy best practices include the use of plain language, avoidance of medical jargon, availability of medical forms and information at a 6<sup>th</sup> grade level, and most importantly, use of the ‘teach-back’ method. The use of plain language and avoidance of medical jargon are the cornerstones of clear communication techniques. They allow for patients’ greater understanding of what is being communicated and these techniques also help to build rapport between the physician and patient (Osborn, 2013). DeWalt (2007) also suggested that physicians should attempt to limit the number of salient points to be discussed to no more than three, in order to help patients remember the information. If there are more important items, supplementary methods, such as written materials can be used to reinforce the information. Pushparajah, Manning, Michels, and Arnaudeau-Begard (2018) emphasized the value of using plain language

summaries of clinical information to promote shared decision-making between physicians and patients. There are also suggested guidelines for written materials, such as informational brochures or medical forms for completion. Some of these guidelines include the use of simple language without medical terminology and acronyms, use of bullet points instead of paragraphs, inclusion of white space, use of 12 point font or higher depending on the population, and the use of images to reinforce the written information (Foster, Idossa, Lih-Wen, & Murphy, 2016). In addition, Pratt and Searles (2017) suggested that the use of visual aids can mitigate the challenges presented by language and numeracy, therefore improving the effectiveness of the physician-patient communication.

The teach-back method has been touted as one of the most effective strategies for physician-patient communication and improvement of health literacy. This method involves the physician seeking confirmation of understanding from patients by asking them to explain what they understood about what they were told regarding their condition and treatment. This strategy not only allows the physician to assess patients' understanding but also to ascertain whether the use of a translator is warranted (Hedelund-Lausen et al., 2018; Nierengarten, 2018). It has been shown to be effective with different populations and conditions, such as postmenopausal women (Bahri, Saljooghi, Noghabi, & Moshki, 2018), older adults with chronic illnesses (Centrella-Nigro & Alexander, 2017; Tamura-Lis, 2013), and for patients with diabetes (National Institute of Health, n.d.). A systematic review by Oh, Lee, Yang, and Kim (2019) showed a 45% decrease in readmissions after hospital discharge when the teach-back method was

used; however, the researchers cited selection bias as a limitation and recommended more well-designed, randomized future studies. Notably, Yukawa, Ishikawa, Yamazaki, Tsutani, and Kiuchi (2017) found that there was a significant relationship between the physician-patient communication and patients with high health literacy. These patients were more likely to disclose their use of complementary and alternative medicines (CAM) to manage their chronic illnesses because physicians took the time to explain their conditions and alternative treatment options.

Given the health informatics technology that now exists and the impact it has made in health care delivery, it would be negligent not to look at health literacy strategies from an eHealth perspective. Karnoe and Kayser (2015) asserted that information-technology (IT) based interventions in the promotion of health literacy are poised to make significant changes in the dissemination of information and measurement of outcomes. However, they noted that there was not enough information about individuals' eHealth literacy and its association with health outcomes (Karnoe & Kayser, 2015). Neter and Brainin (2019) supported this assertion based on the results of a systematic review that showed few studies on eHealth literacy and inconclusive results. Further, Kim and Xie (2017) noted barriers to use, such as readability above 6<sup>th</sup> grade level, limited access to health literacy measurement tools, and limited language options. Additionally, Jacobs, Lou, Ownby, and Caballero (2016) conducted a systematic review of 16 scientific databases for eHealth intervention research over a 10 year period. They reported that overall these interventions showed significant outcomes with regard to health literacy in a diverse settings, diseases, and populations, but acknowledged areas for future

investigation, such as cultural adaptation of tools and information. For example, Zakaria et al. (2018) developed an eHealth literacy scale specifically for the Saudi Arabian population. This eHealth scale utilized several health literacy domains, such as functional, communicative, and critical literacy. eHealth approaches in health literacy are not without challenges because of the groups that are more at risk for poor health literacy. For example, many older adults are at an increased risk for poor health literacy and computer illiteracy, which makes it challenging for them to navigate some of the technology that is being used in the health care system (Xie, 2011). Xie (2011) conducted an experimental study with 146 older adults to investigate the efficacy of a tailored eHealth literacy intervention. He found that regardless of whether they were in the collaborative or individualistic group, they both reported positive attitudes towards the intervention and positive behavioral changes.

### **Physicians' Gender and Health Literacy**

Although there is a fair amount of research on how physician-patient gender influences medical adherence and satisfaction with medical care (Bertakis, Franks, & Epstein, 2009; Hall, Gulbrandsen, & Dahl, 2014; Janssen & Lagro-Janssen, 2012; Mast & Kadji, 2018; Noro, Roter, Kurosawa, Miura, & Ishizaki, 2018), there is a paucity of research on whether physicians' gender relates to health literacy. Garcia-Retamero et al. (2014) found gender to be one of the factors that limited physicians' willingness to have a more collaborative relationship with their patients. They reported that although female surgeons said that they preferred to share the decision-making with their patients, in actuality they involved patients less often. A mixed study by Noro et al. (2018) in Japan

showed that female patients were more satisfied with female physicians' communication. The researchers found that female physicians were more patient-centered. Although female patients got more medical information from male physicians, the consultation was not interactive. Additionally, Mast and Kadji (2018) reported that gender stereotypes may play a role in how physicians' communication is perceived by patients. They found that patients seem to expect patient-centered communication from female physicians, but rated male physicians higher when they did engage in that type of communication. In a systematic review, Janssen and Lagro-Janssen (2012) found that while patients preferred the patient-centered approach exhibited by female gynecologist-obstetricians, clinical experience and competence were deciding factors in choosing a gynecologist-obstetrician. Conversely, in a quantitative study in Norway, Hall et al. (2014) found that male physicians were credited with more patient-centered communication than female physicians.

### **Physicians' Years in Practice**

Studies show that the number of years in practice influences physicians' performance, but some of the research presented is paradoxical. For example, there may be an assumption that given the historical paternalistic view of the physician-patient interaction, more experienced (older) physicians may not be open to shared decision-making (Magnezi et al., 2015). In fact, a systematic review by Choudhry, Fletcher, and Soumerai (2005) revealed an association between longer years of practice and provision of lower quality care. On the other hand, Garcia-Retamero et al. (2014) found that the more experienced surgeons utilized a collaborative approach more often and were

satisfied with their role. They surmised that more experienced physicians had more opportunities for feedback and used it as a way to improve. Regarding years of practice and health literacy, the literature is limited in its coverage. After a health literacy training intervention, Coleman and Fromer (2015) compared physicians who had more than three and a half years of experience with those who had less than three and a half years of experience. Post-assessment, they found that those with more experience reported increased knowledge and improved intentions to use health literacy strategies.

Additionally, Wittenberg, Ferrell, Kanter, and Buller (2018) found that more experienced oncology nurses reported the most difficulty managing low-health literacy patients, even though they were fully qualified. The researchers attributed this challenge to more experienced nurses having less exposure to health literacy knowledge and training.

### **Physicians' Region of Training**

There was no specific research on whether the region in which a physician is trained impacts intentions to use health literacy strategies. There was some literature on how different regions of the world provide communication skills training for the physicians, and as was noted these skills are an important part of health literacy improvement of patients (Bylund et al., 2017; Finset, Ekebery, Eide, & Aspegren, 2003; Hall et al., 2004). The common thread among all regions of the world is the recognition of the importance of effective communication skills in the physician-patient relationship. Bylund et al. (2017) asserted that due to the diverse cultures in the Arabian Gulf countries, there is a strong need for health care communication skills training. Further, they stated that this type of training is not typically included in medical education. The

authors conducted a CME in communication skills training for 410 physicians. The two-day training included the use of didactic lectures, videos, role-playing, open-ended questioning, and the “Breaking Bad News” module (p. 124). Overall, 88% of the physicians were satisfied with the training with 97% rating the role-play sessions as most helpful. A similar training for senior Nordic physicians who had no previous formal training in communication skills yielded 94% of the participants reporting satisfaction with the course (Finset et al., 2003). Hall et al. (2004) created a needs assessment to assess the communication skills of international medical graduates who migrate to Canada to do residency training. The authors found that along with English-language skills, the use of focus groups, and interviews were an important part of the communication skills training.

### **Summary and Transition**

The importance of health literacy in health outcomes of patients has gotten much attention in the literature. The impact of limited health literacy include repeat hospitalizations, poor medical adherence, and high mortality rates (McDonald & Schenkman, 2018)). In addition, there are groups that are especially affected such as the elderly because of challenges with cognitive deficits and poly-pharmacy (Mayo-Gamble & Mouton, 2018). The role of the physician is pivotal in improving the health literacy of patients and has been explored to some extent in the literature. The outcome of most studies showed that many physicians are not only unaware of their role in health literacy but also do not have the requisite training (Coleman & Fromer, 2015; Fransen et al., 2015). Although there was no research specifically on physicians in the Caribbean or

Grenada, the assumption is that they are not different from physicians who are unaware of and un-trained in health literacy strategies. This assumption underlay the purpose of this study which sought to fill that gap in the literature on physicians in Grenada.

Health psychology has utilized the TPB to investigate the intentions of a variety of health professionals, including physicians. It has also been used in the development of tools, such as the HLSBI to measure health literacy knowledge, experiences, and intentions among health care professionals (Caffero, 2013). Specifically, researchers have used it to investigate intentions of health care professionals to use health literacy strategies in their clinical practice (Shamblen et al., 2018; Wilson, White, & Hamilton, 2013). There was limited research on the predictors of intentions to use health literacy strategies among physicians, which was a gap that this study addressed with a focus on physicians in Grenada. In Chapter 3, the overall research design, instrumentation, and ethical considerations for participants is discussed.



## Chapter 3: Research Method

### **Introduction**

Health literacy is strongly correlated with health outcomes, so it is important that physicians are aware of their role in this process and are willing to be a part of it. The purpose of this cross-sectional study was to explore the relationship between HLK, HLE, gender, RoT, and YiP in predicting intentions to use health literacy strategies among physicians in Grenada. A survey method was used to examine the relationships between the variables. The independent variables included HLK, HLE, gender, RoT, and YiP. The dependent variable was intentions to use health literacy strategies. Through this correlational study, I attempted to fill the gap in the literature on intentions to use health literacy strategies among physicians in Grenada.

This chapter includes a description of the study's design and the rationale for choosing this particular research design. The sample selection, chosen instrumentation, data analysis, and threats to validity are discussed, with ethical considerations and the protection of participants' rights ending the chapter.

### **Research Design and Rationale**

In this study, I used the quantitative method to explore any relationships between HLK, HLE gender, RoT, YiP, and intentions to use health literacy strategies among physicians in Grenada. A cross-sectional survey design was chosen because the aim of this study was to explore a correlational relationship between variables by examining a group within a circumscribed time period, rather than longitudinally. Participants could be studied in real-life settings, and random sampling was not required (see Creswell,

2013). Focus groups could also achieve this, but they do not allow for extrapolation to larger populations and cannot provide statistical data; confidentiality is also not guaranteed with this method, and the social desirability bias may impact responses within the group (Frankfort-Nachmias & Leon-Guerrero, 2018). In this study, I used both web- and paper-based, self-administered questionnaires as these methods of data collection were expected to yield a high response rate and decrease the possibility of social desirability bias. Further, web surveys may be more cost-effective and timelier, and paper-based surveys yield higher responses (Groves et al., 2009). The decision to use both methods of data collection was because the older physicians on the island may not want to use the web-based option, which could have resulted in nonresponses and a lower response rate; providing them with a paper option increased the response rate.

### **Research Questions and Hypotheses**

Research Question #1: To what extent is health literacy knowledge, as measured by the HLKES-2, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>0</sub>1*: There is no significant relationship between health literacy knowledge and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>1</sub>1*: There is a significant relationship between health literacy knowledge and intentions to use health literacy strategies among physicians in Grenada.

Research Question #2: To what extent is health literacy experience, as measured by the HLKES-2, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>02</sub>: There is no significant relationship between health literacy experience and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>12</sub>: There is a significant relationship between health literacy experience and intentions to use health literacy strategies among physicians in Grenada.

Research Question #3: To what extent is gender, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>03</sub>: There is no significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>13</sub>: There is a significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

Research Question #4: To what extent is region of training, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>04</sub>: There is no significant relationship between region of training and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>14</sub>: There is a significant relationship between region of training and intentions to use health literacy strategies among physicians in Grenada.

Research Question #5: To what extent is years in practice, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>05</sub>*: There is no significant relationship between years in practice and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>15</sub>*: There is a significant relationship between years in practice and intentions to use health literacy strategies among physicians in Grenada.

## **Methodology**

### **Population**

The target population was physicians who are practicing in Grenada and who are registered with the Grenada Medical Association. This list was obtained from the Grenada Medical Association.

### **Sampling and Sampling Procedures**

**Sampling design.** The target population was physicians registered to practice in Grenada. The sampling frame was the listing of all registered physicians in Grenada. Purposive sampling, which is an example of nonprobability sampling, was used in this study. It is defined as selective sampling and is appropriate to use with small target populations (Trochim, 2006). Specifically, total population sampling was used, and all registered physicians of the Grenada Medical Association were surveyed.

**Sampling size.** According to Burkholder (n.d.), there are three crucial elements in determining the most effective sample size: statistical power, alpha, and effect size. High statistical power is necessary to ensure that real relationships exist between the variables, which are not due to chance alone. There is also an assumption of small to medium effect sizes for psychological studies, so a medium effect size (.15) was chosen, and the recommended power value of 80% (.80) and alpha of 5% ( $\alpha = .05$ ) was used to calculate

sample size (see Burkholder, n.d.). A power analysis was conducted using G\*Power 3.1.9.4 to calculate sample size, and the minimum required was 92 participants (see Faul, Erdfelder, Buchner, & Lang, 2009). The chief medical officer in Grenada (CMO) stated that there are 160 registered physicians on the island of Grenada, so the decision was made to survey the whole target population (G. Mitchell, personal communication, August 6, 2019). Martinez-Mesa, Gonzalez-Chica, Duquia, Bonamiga, and Bastos (2016) advised that a researcher can choose to survey the entire target population if it is small and well-defined. This can potentially eliminate sampling bias and enhance statistical inference. Furthermore, any threats to external validity are discussed in Chapter 5.

### **Procedures for Recruitment, Participation, and Data Collection**

#### **Instrumentation**

The survey instruments that were used to collect data for this study were the HLKES-2 (Walker et al., 2019) and the HLSBI (Cafiero, 2013).

**HLKES-2.** The HLKES was a logical choice for use in this study as it is designed to measure health literacy knowledge and experiences of health care professionals. This instrument has three sections that include health literacy knowledge, health literacy experiences, and demographic data. As such, it captured measurement of all five independent variables of this study. Cormier (2006) developed this self-administered measure as a part of her dissertation exploring the health literacy knowledge and experiences of senior level baccalaureate nursing students. To date, this survey instrument has been used in seven studies, which includes Cormier's original study and a subsequent study by Cormier and Kotrlik (2009) with baccalaureate nursing students.

Knight (2011) used it to investigate the health literacy knowledge and experiences of registered nurses in Georgia as a part of her dissertation study. Similarly, Cafiero (2013) used the HLKES as part of her dissertation with nurse practitioners, Hartman (2014) used it with senior nursing students, Torres and Nichols (2014) adapted its use for a study with students in an associate degree nursing program, and Nesari (2017) used it to explore health literacy knowledge and experiences of Iranian registered nurses. This instrument also allows for slight modifications without affecting its validity and reliability. For example, changing the term *nurse* to *physician*, in Parts I and II, and including years in practice and region of training in the demographic section.

**HLKES validity and reliability.** The HLKES was validated by Cormier (2006), and content validity was evaluated by a group of experts in the health literacy field. Five experts reported a Content Validity Index (CVI) of 0.98, which is above the gold standard of a CVI of 0.80 (Cormier & Kortlik, 2009). Reliability measures reported by four different studies are varied; Knight (2011) reported Cronbach's alpha at 0.81, Torres and Nichols (2014) reported 0.82, Cafiero (2013) reported 0.57 for Part I and 0.69 for Part II, and Nesari (2017) reported 0.85. In 2018, Walker et al. (2019) revised and shortened the original HLKES to reflect best practices. Six health literacy professionals were asked to review the HLKES-2 and provided a CVI rating of 0.95, which is above the acceptable CVI of 0.80 (Walker et al., 2019).

Part I, which was designed to test health professionals' knowledge, was decreased from 29 to 14 multiple-choice questions. This part assesses three major areas of health literacy knowledge: basic information about health literacy principles (four items: 1, 2, 3

,4), suitable health literacy communication strategies (seven items: 8, 9, 10, 11, 12, 13, 14), and expected behaviors of people with poor health literacy (three items: 5, 6, 7). Each correct answer is worth one point, which gives a total score from 0 to 14. An example of an item is “What is the likelihood that a physician will encounter a patient with low health literacy?” Reliability of Part I was reported as Cronbach’s alpha 0.57 (Walker et al., 2019).

Part II, which was designed to assess health literacy experiences, was decreased from nine to four Likert-type scale questions. Responses are 0 = *never*, 1 = *sometimes*, 2 = *frequently*, and 3 = *always*, with the minimum score as 0 and the maximum score as 12. An example of an item is “How often do you evaluate the cultural appropriateness of healthcare materials?” Reliability of Part II was reported as Cronbach’s alpha 0.84 (see Walker et al., 2019).

The demographic section consists of four items that include gender, age, ethnicity, and health literacy inclusion in training curriculum. Adaptation of this section is allowed to include the collection of more demographic information, that does not affect the psychometric properties of the instrument. In this study, two more questions were added to include years in practice and region of training. Permission was obtained from Dr. Catherine Cormier to use the HLKES who sent the HLKES-2 and requested that it be used in my study and feedback sent to her upon completion. This document is included in the appendices.

**HLSBI.** The HLSBI questionnaire was the most appropriate choice of instrument to measure the dependent variable in this study. The HLSBI was developed by Cafiero

(2013) as a part of her doctoral dissertation study on health literacy intentions of nurse practitioners. It is a 14-item self-report instrument based on the TPB. There are four subscales which include attitudes, subjective norms, perceived behavioral control, and intentions. Together these constructs underlie the behavioral intention of the individual to perform the behavior (Ajzen, 1985; Cafiero, 2013). Each item is rated on a seven-point semantic differential scale which is designed to capture participants' best responses that reflect their opinion on the use of health literacy strategies. The response options are presented in an alternating pattern of positive to negative, with a score of 1 for the *most negative* and 7 for the *most positive* (Cafiero, 2013). An example of an item is "Improved patient understanding will improve patient outcomes."

**HLSBI validity and reliability.** The HLSBI was validated by a panel of 10 content experts who provided a CVR of 0.85 for the instrument (Sharifirad et al., 2015). Cafiero (2013) reported an overall Cronbach's alpha of 0.76 although the internal consistency of subjective norms and perceived behavioral control were suboptimal at  $\alpha = .37$  and  $\alpha = .53$ , respectively. However, the developer suggested that these limitations allow for future development of the instrument through its use in research. It is encouraging to note that in a study with nurse practitioners in Iran, Sharifirad et al. (2015) reported Cronbach's alpha values of "0.74 for the attitude subscale, 0.78 for subjective norms, 0.68 for perceived behavioral control, and 0.81 for behavioral intentions" (p. 24). Permission was obtained from Dr. Madeline Cafiero and is included in the appendices.



## **Operationalization of Constructs**

**Health literacy knowledge.** For the purposes of this study, health literacy knowledge was operationally defined as knowing the basic tenets of health literacy as well the strategies and techniques to use to improve patients' health literacy (Cormier & Kortlik, 2009). This continuous independent variable was measured using the HLKES-2 (Walker et al., 2019). Item example, "Low health literacy is most prevalent among which age group?"

**Health literacy experience.** Health literacy experience was operationally defined as the use of strategies and techniques in clinical practice (Cormier & Kortlik, 2009). This continuous independent variable was measured using the HLKES-2 (Walker et al., 2019). Item example, "How often do you evaluate the cultural appropriateness of healthcare materials?"

**Gender.** Gender was operationally defined as male or female and this categorical independent variable was measured on the demographic section of the HLKES-2 (Walker et al., 2019).

**Region of training.** Region of training was operationally defined as whether the physician was trained in the Caribbean or outside of the Caribbean, and this categorical independent variable was measured on the demographic section of the HLKES-2 (Walker et al., 2019).

**Years in practice.** Years in practice was operationally defined as the number of years that the physician has practiced medicine, and this continuous independent variable was measured on the demographic section of the HLKES-2 (Walker et al., 2019).

**Intentions to use health literacy strategies.** Intentions to use health literacy strategies was operationally defined as readiness to use health literacy strategies to improve health literacy in patients. This continuous dependent variable was measured by the HLSBI (Cafiero, 2013). Item example, “Use of health literacy strategies with patients would help patients stay healthy.”

### **Recruitment, Data Collection, and Analyses**

**Procedure and protocol.** This study followed the ethical guidelines as outlined by the American Psychological Association (2010), and I obtained written/electronic informed consent and ensure the confidentiality of all participants. All physicians registered with the Grenada Medical Association was contacted via email or telephone for those who did not have an email address. For those with email, a description of the study, the informed consent process, and a link to the survey on Qualtrics was included. Survey participation began after informed consent was obtained, and responses were anonymous. The surveys were the HLKES-2, which has three parts: health literacy knowledge, health literacy experience, and a demographic section; and the HLSBI. The demographic questionnaire included information on age, gender, race, inclusion of health literacy in training curriculum, years of practice, and region of training. I provided my contact information as well as that of the Walden’s IRB representative, so that participants can ask questions, if needed. Potential participants who do not have an email address were contacted via telephone to ask whether they were interested in participating in the study. For those who answered in the affirmative, a research packet was delivered to their office which contained the following: (a) informed consent form; (b) HLKES-2

survey; and (c) HLSBI questionnaire. Participants were given one month to complete the surveys with a reminder telephone call after three weeks. My phone number was given so that contact was made to pick up the packet once the survey is completed. In order to increase responses, I attended three continuing medical education seminars (CME) and handed out paper surveys, and reminder emails and phone calls were sent to those who did not complete the survey after the deadline. All raw data was stored in a locked cabinet in my office, and analyzed data was password-protected and encrypted. Privacy envelopes was used for data collection and all raw data will be destroyed by shredding five years after the research is completed.

**Data analyses.** The Statistical Package for Social Sciences (SPSS 25.0) was used for data analysis. Descriptive statistics was used to describe the demographic data and the means and standard deviations for the variables of interest were reported. Correlations were conducted to determine if any significant relationships exist between the variables, and the correlation coefficient was used to determine effect size (Field, 2009). Multiple regression analysis was used to examine the direct effects of health literacy knowledge, health literacy experience, gender, region of training, and years of practice on intentions to use health literacy strategies among physicians in Grenada.

### **Threats to Validity**

Threats to internal validity should be nonexistent or low because this study was correlational and I was not attempting to establish causation between variables. A possible threat to external validity was the limited generalizability of the findings of physicians in Grenada to other Caribbean islands. Similarly, the findings cannot be

generalized to other health care professionals, such as nurses. However, this study can serve as the impetus for similar studies with physicians and other health care professionals in the region. Another possible threat to external validity was social desirability bias in that participants may respond to items to portray themselves in a favorable light. This bias may be mitigated by using the survey method which assures anonymity, and by clearly informing participants that their responses are anonymous. In order to improve construct validity, the instruments chosen for this study were used in similar research and showed adequate reliability and validity.

### **Ethical Consideration of Participants**

As guided by the APA (2010), I gave consideration to the informed consent process as well the possible effects that this study could have on participants. Informed consent dictated that I obtained confirmation of participants' understanding of the process, their willingness to participate, and the knowledge that they can withdraw at any time without adverse consequences (see Creswell, 2013). Informed consent included three components which are capacity, information, and voluntariness. In this study, given that the participants are physicians, the assumption was made that they possessed the legal and factual capacity to participate. In addition, the study did not include any vulnerable populations, and its nature assumed minimal risk as the questions were not considered intrusive or stress-provoking.

Institutional review board (IRB) approval (19027) was obtained from St. George's University which provides oversight for research conducted in Grenada.

Subsequently, IRB approval (09-11-19-0175623) was granted by Walden University to begin data collection.

Confidentiality and protection of participants' rights was ensured by coding data numerically and excluding any identifying information of the participants. All raw data was stored in a locked cabinet in my office, and analyzed data was password-protected and encrypted. Privacy envelopes was used for data collection and all raw data will be destroyed by shredding five years after the research is completed, as required by Walden University.

### **Summary and Transition**

This study was designed to explore the predictors of intentions to use health literacy strategies among physicians in Grenada. In Chapter 3, I described the study's design and rationale. The sample design, research questions and hypotheses, instrumentation, data analysis, and threats to validity were also discussed, as well as the operational definitions of variables. In addition, the ethical considerations, confidentiality, and protection of participants' right were addressed. In Chapter 4, I provided an in-depth coverage of the results of the statistical analyses of the study which attempted to answer research questions that explore relationships between HLK HLE, gender, RoT, YiP, and intentions to use health literacy strategies among physicians in Grenada.

## Chapter 4: Results

### **Introduction**

The purpose of this quantitative correlation study was to examine the predictors of intentions to use health literacy strategies among physicians in Grenada. Data were obtained from a health literacy knowledge and experience survey, a health literacy intentions survey. Demographic data were also collected. The independent variables were HLK, HLE, YiP, gender, and RoT. The dependent variable was intentions to use health literacy strategies with patients. The null hypotheses for HLK, HLE, and YiP were rejected, and the alternative hypotheses were accepted. HLK, HLE, and YiP significantly predicted intentions to use health literacy strategies among physicians in Grenada. In this chapter, I summarize the results of the analyses and provide a description of the participants in this study.

### **Data Collection**

Data were collected over a 2-month period. Initially, a Qualtrics survey link was sent to all members of the Grenada Medical Association. However, after 3 weeks of limited participation, I printed paper copies of the survey and attended three CME seminars to distribute to the physicians. Results from both Qualtrics and paper surveys yielded a total of 138 participants; however, 20 surveys were incomplete. Therefore, 118 completed surveys were used for this study. Data analysis was conducted using the SPSS 25 software package.

### **Sample Demographics**

The target demographic for this study included physicians in Grenada. According to the Grenada Medical Association, there were 160 physicians registered. The sample consisted of 118 physicians, which represents approximately 74% of the population of interest. Forty-eight percent of the participants were females, and 52% were males. Seventy percent were trained in the Caribbean, and 30% were trained outside the region. Thirteen percent were in the 65 to 84 age range, 34% were in the 45 to 64 age range, and the majority of the participants were in the 25 to 44 age range. Ninety percent of the sample identified as either Caribbean or Black, 8% identified as other, and 2% chose to not answer.

### **Presentation of Findings**

In this section, I discuss testing of the assumptions, present descriptive statistics and inferential statistic results as they relate to the hypotheses and conclude with a summary of the study's findings.

#### **Tests of Assumptions**

The assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals were evaluated.

**Multicollinearity.** Multicollinearity was evaluated by viewing the correlation coefficients among the predictor variables. All bivariate correlations were small to medium (see Table 1), and the variance inflation factor equaled 1.12, which was within an acceptable level. Therefore, the violation of the assumption of multicollinearity was not evident (see Field, 2018).

Table 1

*Correlation Coefficients Among Study Predictor Variables*

Variable	HLK	HLE	YiP	Gender	RoT
HLK	1.00	-.103	-.245	-.227	-.068
HLE	-.103	1.00	.092	.219	.149
YiP	-.245	.092	1.00	.290	.083
Gender	-.227	.219	.290	1.00	.256
RoT	-.068	.149	.083	.256	1.00

*Note.*  $N = 118$ .

**Outliers, normality, linearity, homoscedasticity, and independence of residuals.** Outliers, normality, linearity, homoscedasticity, and independence of residuals were evaluated by examining the normal probability plot of the regression standardized residual (see Figure 1) and the scatterplot of the standardized residuals (see Figure 2). The examinations indicated that there were no major violations of these assumptions. The tendency of the points to lie in a reasonably straight line (see Figure 1), diagonal from the bottom left to the top right, provides supportive evidence that the assumption of normality has not been violated (see Field, 2018). Further, the lack of a clear or systematic pattern in the scatterplot of the standardized residuals (see Figure 2) supports the assertion of the assumptions being met.



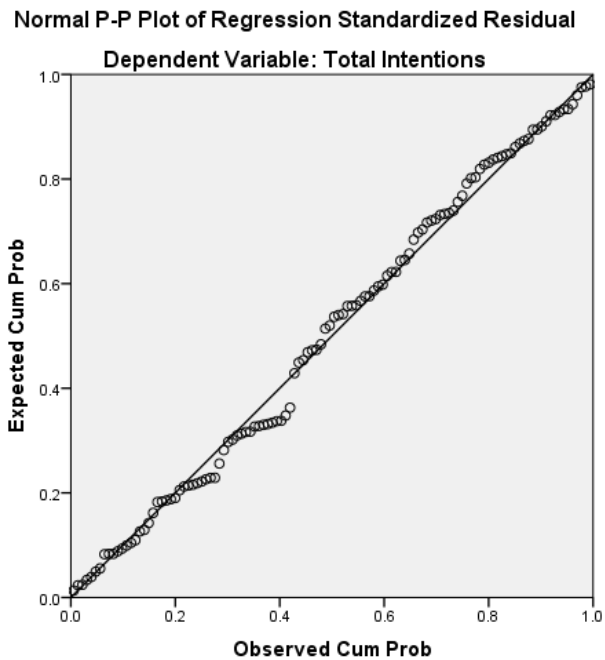


Figure 1. Normal probability plot of the regression standardized residuals.

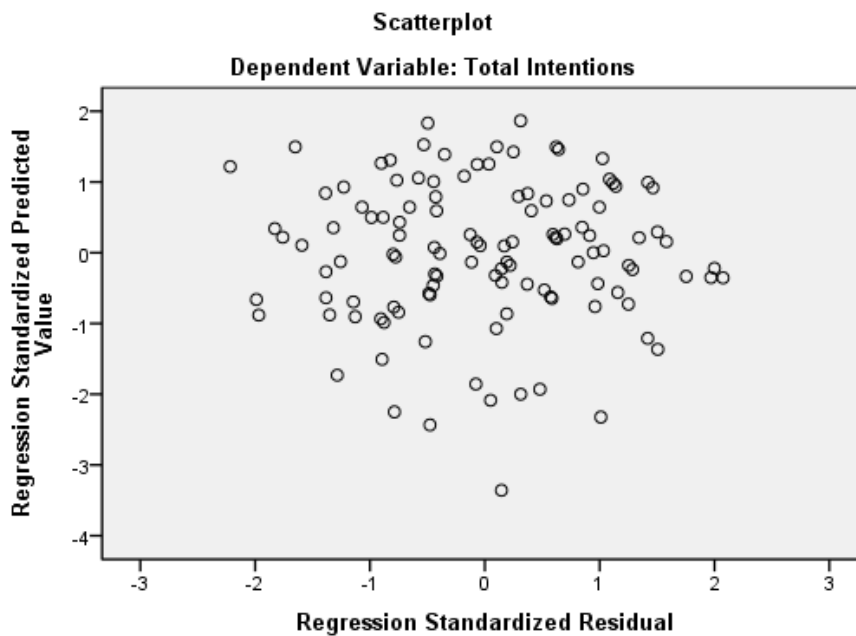


Figure 2. Scatterplot of the standardized residuals.

## Descriptive Statistics

Scores on HLK, HLE, YiP, and intentions to use health literacy were recorded for each participant. Sixty-one males and 57 females participated in the study. Descriptive statistics are presented in Table 2.

Table 2

*Means (M) and Standard Deviations (SD)*

Variable	<i>M</i>	<i>SD</i>
Intentions	75.85	10.92
HLK	7.64	2.53
HLE	5.48	2.76
YiP	11.29	9.58

*Note: N = 118*

## Inferential Results

Standard multiple linear regression was used to examine the efficacy of HLK, HLE, gender, YiP, and RoT in predicting intentions to use health literacy strategies. The independent variables were HLK, HLE, gender, YiP, and RoT. The dependent variable was intentions to use health literacy strategies. The null hypotheses were that HLK, HLE, gender, YiP, and RoT would not significantly predict intentions to use health literacy strategies. The alternative hypotheses were that HLK, HLE, gender, YiP, and RoT would significantly predict intentions to use health literacy strategies.

Preliminary analyses were conducted to assess whether the assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals were met; no violations were noted (see the Tests of Assumptions section in this chapter). The overall regression model was able to significantly predict intentions to use health literacy strategies,  $F(5, 112) = 7.38, p < .001, R^2 = .248$ . The  $R^2 (.248)$  value indicated that approximately 25% of variations in intentions to use health literacy strategies is accounted for by the linear combination of the predictor variables. In the final model, HLK ( $\beta = .34, p = < .001$ ), HLE ( $\beta = .26, p = .003$ ), and YiP ( $\beta = -.20, p = .027$ ) were statistically significant with intentions to use health literacy strategies.

An examination of the regression weights appearing in Table 3 indicated that two predictor variables, HLK and HLE, had a positive and significant impact on intentions to use health literacy strategies, while YiP had a negative and significant impact on intentions to use health literacy strategies. The standardized regression coefficient for HLK equaled ( $\beta$ ) .34, was statistically significant ( $p < .01$ ), and represented a small effect size with a squared semi partial correlation of ( $sr^2$ ) equal to .10, accounting for approximately 10% of the variability in intentions to use health literacy strategies. HLE also had a positive, significant, and small effect on intentions to use health literacy strategies ( $\beta = .26, p = .003, sr^2 = .063$ ) and accounted for approximately 6% of the variability in intentions to use health literacy strategies. YiP had a negative, significant and small effect on intentions to use health literacy strategies ( $\beta = -.20, p = .027, sr^2 = .034$ ) and accounted for 3% of the variability in intentions to use health literacy strategies.

Gender and RoT did not provide any significant predictive value in intentions to use health literacy strategies. The final predictive equation was as follows:

$$\text{Intentions Health Literacy Strategies} = 61.714 + 1.445 (\text{HLK}) + 1.023 (\text{HLE}) - .222 (\text{YiP}) - 1.601 (\text{Gender}) + 2.790 (\text{RoT}).$$

**Health literacy knowledge.** HLK was measured using the HLKES-2, Part I (knowledge scale; Walker et al., 2019). The reliability of the HLKES-2, Part I was measured by Cronbach's alpha with this study's population of physicians and yielded  $\alpha = .62$ , which is considered suboptimal but acceptable reliability for social science data (see Field, 2018). This outcome also demonstrated improved reliability from the developers of the revised version; Walker et al. (2019) reported  $\alpha = .57$ .

The positive slope for HLK (1.445) as a predictor of intentions to use health literacy strategies indicated that there was approximately a 1.445 increase in intentions for each one-unit increase in HLK. In other words, intentions tend to increase as HLK increases. The squared semi partial coefficient ( $sr^2$ ) that estimated how much variance in intentions to use health literacy strategies was uniquely predictable from HLK was .10, indicating that 10% of the variance in intentions is uniquely accounted for by HLK, when HLE, YiP, RoT, and gender are controlled.

**Health literacy experience.** HLE was measured using the HLKES-2, Part II (experience scale). The reliability of the HLKES-2, Part II was measured by Cronbach's alpha with this study's population of physicians and yielded  $\alpha = .77$ . This finding is lower than what Walker et al. (2019) reported ( $\alpha = .84$ ) but still within acceptable reliability of at least .70 (see Field, 2018).

The positive slope for HLE (1.023) as a predictor of intentions to use health literacy strategies indicated there was approximately a 1.023 increase in intentions for each one-unit increase in HLE. In other words, intentions tend to increase as HLE increases. The squared semi-partial coefficient ( $sr^2$ ) that estimated how much variance in intentions to use health literacy strategies was uniquely predictable from HLE was .06, indicating that 6% of the variance in intentions is uniquely accounted for by HLE, when HLK, YiP, RoT, and gender are controlled.

**Years in practice.** The negative slope for YiP (-.222) as a predictor of intentions to use health literacy strategies indicated that there was a .222 decrease in intentions for each additional one-unit increase in YiP. In other words, intentions tend to decrease as YiP increases. The squared semi-partial coefficient ( $sr^2$ ) that estimated how much variance in intentions to use health literacy strategies was uniquely predictable from YIP was .03, indicating that 3% of the variance in intentions is uniquely accounted for by YiP, when HLK, HLE, RoT, and gender are controlled. Table 3 depicts the regression summary.

Table 3

*Regression Analysis Summary for Predictor Variables*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>p</i>	$\beta$ 95% CI	<i>sr</i> <sup>2</sup>
HLK	1.445	.370	.335	3.901	<. 01	[.711, 2.179]	.102
HLE	1.023	.335	.258	3.056	.003	[-.360, 1.687]	.063
YiP	-.222	.099	-.195	-2.237	.027	[-.420, -.025]	.034
Gender	-1.601	1.974	-.074	-.811	.419	[-5.511, 2.310]	.004
RoT	2.790	2.028	.117	1.376	.172	[-1.228, 6.809]	.013

Note. *N* = 118.

### Hypothesis Testing

Research Question #1: To what extent is HLK, as measured by the Health HLKES-2, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H*<sub>0</sub>1: There is no significant relationship between HLK and intentions to use health literacy strategies among physicians in Grenada.

*H*<sub>1</sub>1: There is a significant relationship between HLK and intentions to use health literacy strategies among physicians in Grenada.

There was a significant and positive relationship between HLK and intentions to use health literacy strategies among physicians in Grenada ( $r = .365$ ,  $p < .001$ ,  $r^2 = .133$ ), thus the null hypothesis was rejected.

Research Question #2: To what extent is HLE, as measured by the HLKES-2, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>0</sub>2*: There is no significant relationship between HLE and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>1</sub>2*: There is a significant relationship between HLE and intentions to use health literacy strategies among physicians in Grenada.

There was a significant and positive relationship between HLE and intentions to use health literacy strategies among physicians in Grenada ( $r = .207, p = .003, r^2 = .043$ ), thus the null hypothesis was rejected.

Research Question #3: To what extent is gender, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>0</sub>3*: There is no significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>1</sub>3*: There is a significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada.

There was no significant relationship between gender and intentions to use health literacy strategies among physicians in Grenada ( $r = -.120, p = .419, r^2 = .014$ ), thus the null hypothesis was not rejected.

Research Question #4: To what extent is RoT, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>0</sub>4*: There is no significant relationship between RoT and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>1</sub>4*: There is a significant relationship between RoT and intentions to use health literacy strategies among physicians in Grenada.

There was no significant relationship between RoT and intentions to use health literacy strategies among physicians in Grenada ( $r = .098$ ,  $p = .172$ ,  $r^2 = .010$ ), thus the null hypothesis was not rejected.

Research Question #5: To what extent is YiP, as measured by a demographic questionnaire, related to intentions to use health literacy strategies, as measured by the HLSBI questionnaire, among physicians in Grenada?

*H<sub>0</sub>5*: There is no significant relationship between YiP and intentions to use health literacy strategies among physicians in Grenada.

*H<sub>1</sub>5*: There is a significant relationship between YiP and intentions to use health literacy strategies among physicians in Grenada.

There was a significant and negative relationship between YiP and intentions to use health literacy strategies among physicians in Grenada ( $r = -.265$ ,  $p = .027$ ,  $r^2 = .070$ ), thus the null hypothesis was rejected.



### Summary of Findings

The purpose of this study was to examine the efficacy of HLK, HLE, gender, YiP, and RoT in predicting intentions to use health literacy strategies among physicians in Grenada. Data were collected from 118 physicians in Grenada, 48% of which were female and 52% were male. I used standard multiple linear regression to examine the ability of these independent variables to predict the value of intentions to use health literacy strategies. Assumptions surrounding multiple regression were assessed with no violations noted. The model as a whole was able to significantly predict intentions to use health strategies,  $F(5, 112) = 7.38, p < .001, R^2 = .248$ , with the predictor variables accounting for 25% of variations in intentions to use health literacy strategies. Specifically, HLK, HLE, and YiP provided useful predictive information about intentions to use health literacy strategies; however, gender and region of training were not significant predictors. The conclusion from this analysis is that HLK, HLE, and YiP are significantly associated with intentions to use health literacy strategies. In the following chapter, I summarize the findings and conclusions about the findings. Chapter 5 also includes the limitations and recommendations for future research, and address the implications for positive social change.

## Chapter 5: Discussion, Conclusions, and Recommendations

### **Introduction**

The purpose of this study was to examine the predictors of intentions to use health literacy strategies among physicians in Grenada. With questions based on the TPB (Ajzen, 1985), participants self-reported on health literacy knowledge, health literacy experience, and intentions to use health literacy strategies with their patients. In addition, demographic data that included gender, years in practice, and region of training were also collected. Research has provided evidence for the correlation between health literacy and health outcomes (Batista et al., 2017; Du et al., 2018; May et al., 2018; McDonald & Schenkman, 2018; Mottus et al., 2014), but there has been little exploration of the physician's role in the health literacy process (Coleman & Fromer, 2015; Fransen et al., 2015; Wahab et al., 2018). Though it is important for health care professionals to have adequate health literacy awareness, knowledge, and skills (Brach et al., 2012; Coleman, 2011; van der Heidi et al., 2018), many physicians are unaware of their role or underestimate their responsibility in the health literacy process (Coleman & Fromer, 2015; Fransen et al., 2015; Hersh et al., 2015; Lambert et al., 2014; Lepore et al., 2017). Therefore, this study can provide information that can be used to support improvements in health literacy and health literacy strategies. For instance, curriculum can be informed by an understanding of the predictors of intentions to use health literacy strategies. Improving health literacy knowledge can help physicians' understanding of health literacy barriers experienced by their patients as well as the behaviors displayed by

patients with low health literacy so they can tailor their approaches during consultations (Lambert et al., 2014).

The study's findings demonstrated significant predictive value of health literacy knowledge, health literacy experience, years of practice, and intentions to use health literacy strategies. There was a negative correlation between years of practice and intentions to use health literacy strategies. Gender and region of training did not provide any significant predictive association with intentions to use health literacy strategies.

### **Interpretation of the Findings**

This study provides several noteworthy findings that are supported in the literature and yielded new information.

#### **Health Literacy Knowledge**

Health literacy knowledge was measured using the HLKES-2, Part I (Walker et al., 2019). In this study, I showed that physicians in Grenada demonstrated a basic proficiency of health literacy knowledge, which is fairly consistent with similar research in the United States with other health professionals, such as registered nurses and nurse practitioners (Cafiero, 2013; Knight, 2011). Eighty-three percent of physicians in this study correctly identified the ability of a patient with adequate health literacy, whereas 75% recognized that patients with low health literacy may avoid asking their health providers questions. Further, 86% of the physicians understood that the use of illustrations in written materials helped to improve overall understanding, and 86% also reported the use of simple language as a priority when communicating with patients. This is important because many medical students and practicing physicians still use medical

jargon during their patient interaction (Bittner, Bittner, Jonietz, Dybowski, & Harendza, 2016), but patients do not ask for clarification of such terms for fear of seeming inadequate. Further, patients with low health literacy will also avoid follow-up visits or not comply with a physician's instructions because they do not understand what is being communicated (Du et al., 2018). As such, when conducting training with medical students and physicians, it will be helpful to discuss barriers to compliance and emphasize the avoidance of medical jargon when communicating with patients.

Another finding was that 67% of participants noted the teach-back method as the best way to evaluate patient understanding. Cafiero (2013) and Knight (2011) reported similar results with nurse practitioners and registered nurses, respectively. The teach-back method is an evidenced-based technique where patients are asked to explain what they understood about their condition and treatment (Holman, Weed, & Kelley, 2019). This allows the physician to ascertain whether the patient understood what was being communicated. There is an increase in health providers reexplaining information when patients display poor understanding of what was communicated, but using the teach-back method can increase providers' self-efficacy in using the technique and increase patient understanding (Holman et al., 2019). Cues to action such as posters with the teach-back method placed in the locker rooms and common areas of physicians can serve as reminders, and lunchtime brown-bag sessions can be used to educate those who are not knowledgeable about the technique (Ryan-Madonna, Levin, & Lauder, 2019).

This study also revealed specific gaps in physicians' in Grenada health literacy knowledge related to prevalence of and screening for low health literacy as well as

recommendations for written health materials. Only 53% of physicians knew that low health literacy was most prevalent in individuals over the age of 65, which is important to address because Grenada is no different from the global trend of an increase in the aging population and has an average life expectancy of 74.1 years (Pan American Health Organization, 2017). Low health literacy among this group has been linked to increased hospitalizations and higher mortality rates (McDonald & Schenkman, 2018).

Furthermore, self-management of chronic diseases such as diabetes and treatment adherence among older adults with low health literacy are poor because of a lack of understanding of their condition and treatment (Vandenbosch et al., 2018). Physicians also either avoid addressing sexual health concerns with older adults either because they are uncomfortable raising the topic or overestimate the knowledge and awareness of their older patients (Levkovich, Gewirtz-Meydan, Karbabi, & Ayalon, 2018). Thus, it is important for physicians to recognize the behaviors associated with low health literacy among this group and use strategies to mitigate its consequences (Hedelund-Lausen et al., 2018; van der Heidi, 2018). CME sessions can be provided to physicians to give them strategies to address issues such as sexual health, chronic disease management, and treatment adherence with the older population. These sessions can be a hybrid of didactic lectures, role play, and case studies (Naccarella & Murphy, 2018). This intervention can give physicians the tools to improve health literacy and positively affect health outcomes (Du et al., 2018; May et al., 2018; McDonald & Schenkman, 2018).

As part of the gap in participants' knowledge of health literacy, 86% and 53% of the physicians also incorrectly answered items dealing with the reading ability of low

health literate patients and their display of health behaviors, respectively. This finding is similar to previous research such as Seurer and Vogt (2013) and Goggins et al. (2016), who reported that physicians often overestimate the health literacy levels of their patients. This mistake leads to missed opportunities to use health literacy strategies to build patients' health literacy capacity.

Another finding was that 68% of physicians in Grenada did not know the recommended reading level for written health information. This suggests that much of the health information brochures that are distributed at local clinics and hospitals are not written at a level that can be understood by many patients. Knight (2011) reported similar findings among registered nurses, and Wilson (2009) found that most patient education materials (PEM) are written above the recommended fifth grade level, which makes it difficult for many adults to understand. The revision of PEM is an opportunity to improve patient health literacy and subsequent medical adherence (Prabhu et al., 2017). This revision can be a collaborative effort between health care professionals and medical students and can provide an opportunity to improve health literacy knowledge and experience.

### **Health Literacy Experience**

Physicians in this study were also asked to report their health literacy experiences on the frequency with which they evaluated the reading levels, cultural appropriateness, use of illustrations of written materials, and the use of such materials with patients. The mean total score was 5.48, with many physicians reporting *sometimes*, which demonstrated minimal health literacy experience among this group. This suggests that

either they do not have the opportunity to evaluate PEM for appropriateness or are not aware that they should be evaluating them before dissemination. This finding is supported in the literature, as physicians and other healthcare professionals often overestimate their patients' understanding of written and verbal information (Cafiero, 2013; Coleman & Fromer, 2015). Further, because many healthcare professionals are unaware of their role in the health literacy process, they may not evaluate materials before giving them to their patients (Hersh et al., 2015; Lepore et al., 2017).

Additionally, approximately 36% of physicians reported that they assessed the cultural appropriateness of healthcare materials *frequently* or *always*. However, research has shown that among a group of nurse practitioners, over half of them assessed healthcare materials for cultural appropriateness due to the emphasis on cultural competence from accrediting agencies for this outcome (Cafiero, 2013). Another finding related to assessing materials was that 47% of participants in the current study also reported *frequently* or *always* for assessing the use of illustrations in healthcare materials. These responses were incongruent with the responses on the item on the health literacy knowledge scale that tested the understanding of the effectiveness of the use of illustrations in improving patient understanding. This incongruency may be due to physicians' awareness of the effectiveness of illustrations, but they do not typically assess its use in PEM (Zeltner et al., 2019). However, it is important for physicians to be intentional about the use of illustrations and videos to communicate disease and treatment knowledge to their patients, which may be done through collaboration with local artists to create culturally appropriate illustrations (Zeltner et al., 2019).

Another discrepant finding was in the responses to the item that asked about the assessment of the reading level of written healthcare material. Forty percent reported *sometimes*, 27% reported *frequently*, and 10% reported *always*. However, when asked on the health literacy knowledge scale, 68% did not know the recommended reading level for written healthcare materials. This discrepancy may be explained by the premise that physicians do evaluate the reading level of written materials but with the assumption that their patients' comprehension is at a higher level (Seurer & Vogt, 2013). Overall, these results underscore the importance of creating awareness among physicians about their role in the health literacy process and providing opportunities to increase health literacy knowledge and hone health literacy skills to improve experience (Lambert et al., 2014; Lepore et al., 2017).

### **Years in Practice**

Years in practice was a significant predictor of intentions to use health literacy strategies among physicians in Grenada, and the mean of physicians' years practicing medicine was 11.29 years. This finding differed from research from the literature review such as Cafiero (2013), who did not find a significant correlation among the nurse practitioners in her study. However, the literature was limited in its exploration of years in practice in relation to health literacy. Nevertheless, the finding from this study still corroborated Coleman and Fromer's (2015) research that physicians with more than 3 years of experience reported high intentions to use health literacy strategies. Garcia-Retamero et al. (2014) also suggested that more experienced physicians had more



learning opportunities. Therefore, increased health literacy knowledge and experience influenced their intentions and subsequent behavior.

### **Gender**

Although there is limited literature on physicians' gender as it relates to the health literacy of their patients, there is well-documented research on gender differences in physicians' communication styles (Garcia-Retamero et al., 2014; Noro et al., 2018; Shin et al., 2015). Gender was cited as one of the factors that limited physicians' willingness to be more collaborative with their patients in the decision-making process. For example, female surgeons have reported their preference to share the decision-making with their patients but involved them less often (Garcia-Retamero et al., 2014). Further, Shin et al. (2015) and Noro et al. (2018) reported that female physicians were perceived to be more patient-centered in their interactions within their medical practice.

In this study, gender was not a significant predictor of intentions to use health literacy strategies. This finding is supported by Jefferson, Bloor, and Hewitt (2015), who found that physicians' gender did not impact the length or quality of their consultations with the patients. Additionally, Bolivar, Gonzalez, Martos, Garcia, and Durantez (2018) reported no correlation between physician or patient gender and length of consultation. The length of consultation is associated with the quality of the physician-patient interaction. Researchers have suggested that longer consultations are associated with more collaboration with patients, which gives them the opportunity to ask more questions and improves their health literacy (Jefferson et al., 2015).

### **Region of Training**

The region in which a physician was trained had no influence on their intentions to use health literacy strategies with their patients. There was no specific research on whether region of training plays a role on physicians' intentions to use health literacy strategies, but the literature did show that communication skills training is an integral part of physicians' training around the world (Bylund et al., 2017; Finset et al., 2003; Hall et al., 2004). Many medical schools do not have health literacy as a part of the curriculum, but its principles are embedded in the clinical communication skills component (Coleman & Fromer, 2015). This is the case at St. George's University in Grenada, one of the largest medical schools in the Caribbean region, where, according to one of the faculty at the school, the tenets of health literacy strategies are taught under the umbrella of communication skills in the clinical setting.

### **Intentions to Use Health Literacy Strategies**

Intentions to use health literacy strategies was measured by the HLSBI (Cafiero, 2013). The reliability of the HLSBI was measured by Cronbach's alpha with this study's population of physicians and yielded  $\alpha = .82$ , which is good reliability (Field, 2018). Therefore, researchers can assume that when this instrument is used with a similar population, it will reliably measure intentions to use health literacy strategies.

The intentions to use health literacy strategies were high among physicians in Grenada. Based on the TPB, Fishbein and Ajzen (2010) proposed that the "higher the score on a well-constructed instrument, the stronger the intention of the participant to perform the behavior . . . and the stronger the intention, the more likely that the behavior

will be carried out” (p. 21). As the focus of this study was on intentions to use health literacy strategies, the high score was interpreted to mean that physicians intend to use health literacy strategies in their practice. To build a health literate organization, the health system stakeholders in Grenada need to capitalize on these intentions and provide opportunities to support them (Brach, 2017). To achieve this, health literacy should be pervasive throughout all operations in the healthcare system (Brach, 2017). The opportunities to support the physicians in this endeavor range from providing health literacy workshops to improve knowledge to visual reminders in the clinical setting. Some health literacy experts advocated the use of mandatory training as a way to ensure that all physicians and healthcare professionals are included. They posited that even those who would not voluntarily attend will learn and use health literacy strategies, thus improving health outcomes of their patients (Brach, 2017; Coleman & Fromer, 2015).

Although this study did not address the subscales of attitudes, subjective norms, and perceived behavioral control, the mean subscale scores were also high. Assuming that the perceived behavioral control is true, this can serve as a conduit for actual control over using health literacy strategies with patients (Ajzen, 1985). As such, interventions developed to change behavior can focus on perceptions of behavioral control. For example, physicians can be placed in focus groups that include a diverse demographic of years of experience, gender, and specialty. These groups can design the health literacy interventions for their colleagues, which will give them actual control over increasing health literacy knowledge, experience, and ultimately the use of health literacy strategies with their patients (Brach, 2017).

### **Limitations of the Study**

The findings of this study contributed to the limited literature on the predictors on intentions to use health literacy strategies, specifically among physicians in Grenada. However, it is not without its limitations. First, the results showed significant predictive value between health literacy knowledge, health literacy experience, years of practice, and intentions to use health literacy strategies. However, because this study was correlational in nature, no assumptions can be made about causal relationships between the variables (Field, 2018). Second, in using the TPB as the theoretical framework, there was only a focus on intentions as the basic determinant of behavior (Ajzen, 1985). An exploration of the impact of attitudes, subjective norms, and perceived behavioral control among this demographic can be considered for future research. Third, the use of a convenience sample of physicians at CMEs and e-mails sent from the GMA may have affected the social desirability response bias (see Tourangeau & Yan, 2007). Even though the responses were anonymous, physicians may have felt the urge to report high intentions to use health literacy strategies because of perceptions that responses were linked to their work ethic or expertise. In addition, the use of self-reporting responses may have also increased the possibility of consulting the internet or each other for answers to improve their responses on the health literacy knowledge component of the survey. Cheating on online surveys occurs despite anonymity, largely because of the social desirability response bias; however, experts suggest that asking respondents for a commitment to be honest can serve as a deterrent (Clifford & Jerit, 2016). In this study,

participants were asked not to consult outside sources, which they agreed to as a part of informed consent.

Finally, this study was limited to registered physicians in Grenada, and physicians employed in academia but not engaged in clinical practice were excluded. The exclusion of physicians teaching at the medical school may have affected the health literacy knowledge scores as they may be more informed about health literacy. Subsequently, this delimitation affected the generalizability of the results to all physicians in Grenada and those outside of Grenada.

### **Recommendations**

Although there are no formal statistics about the levels of health literacy in Grenada, it can be assumed that they are no different from the global statistics that show that the prevalence of low health literacy in any given society is high (Malik, Zaidi, & Hussain, 2017). The healthcare system in Grenada is socialized medicine, where healthcare is offered free of charge to its citizens across the 36 public health care facilities (WHO, 2017). The Ministry of Health (MoH) is primarily responsible for policy and financial decisions that govern the healthcare system. As such, the findings of this study have implications for all stakeholders in the healthcare system in Grenada in the areas of policymaking, practice, and education.

### **Policymaking**

Previous researchers have cautioned that for health literacy levels to be improved, it should be addressed at all levels of society: individual, policy, education, and health systems (Brach et al., 2012; Lai et al., 2015; Van den Broucke, 2014; van der Heidi et al.,

2018). For instance, Briglia, Perlman, and Weissman (2015) posited that health literacy also includes the importance of health professionals and institutions to communicate in an effective manner so that individuals can make informed decisions.

The acknowledgment of the challenges faced by health care professionals must also be addressed such as time constraints, and lack of the requisite training and resources. A major barrier may also be the needed culture shift for a more collaborative approach to patient care (Briglia et al., 2015). This would suggest that the MoH, and particularly the CMO, have to play a critical role in ensuring that the clinical staff use health literacy strategies with every patient encounter. However, before this change can be implemented, health literacy training with all levels of the clinical staff is necessary. The high intentions to use health literacy strategies that were displayed by the physicians in this study can act as an impetus for training. This is an opportunity to provide them with the necessary health literacy knowledge and experience, which will further drive their intentions and subsequent behavior. Wenger's professional educational learning design framework (engagement, imagination, alignment, participation, emergent, local/global, identification) can be used to ensure that health professionals receive evidence-based health literacy education (Naccarella & Murphy, 2018).

The TPB's premise that intentions are the strongest determinant of behavior supports the assumption that if these physicians are given the necessary tools and support, they will use health literacy strategies with their patients (Ajzen, 1985). This recommendation is made with the recognition that the government of Grenada has limited resources and may not have the budgetary allocations to provide this training. As a result,

partnering with St. George's University to provide this training may be a reasonable and realistic solution. The MoH has requested the expertise of the Department of Psychology for other initiatives for their staff such as stress management and conflict resolution workshops, and health literacy training can also be added to the agenda. A working committee comprising of the CMO, physicians, nurses, and psychologists can create the timelines, objectives, and curriculum for this initiative. This committee can also conduct an audit of current PEM to ensure that they meet the standard for health literacy best practices. This collaborative approach will ensure limited cost to the government and create opportunities for service to the community for psychologists at St. George's University. The development of a health literate organization needs adequate time and can take up to a year, so it is important to keep expectations realistic and achievable (Brach, 2017).

### **Practice**

This study revealed a significant relationship between health literacy knowledge, health literacy experience, years in practice, and intentions to use health literacy strategies among physicians in Grenada. Furthermore, not only were overall intentions to use health literacy strategies high among this demographic but also perceived behavioral control. These results were encouraging, as the TPB emphasizes perceived behavioral control as the most important factor in influencing intentions, which is the major determinant of behavior (Ajzen, 1985). These findings suggest that physicians in Grenada feel that they have control over this behavior and are prepared to incorporate strategies to improve the health literacy of their patients. Further, if individuals are given an adequate

amount of actual control over the behavior, they will be more likely to follow through on their intentions (Ajzen, 1985). As such, the MoH should include physicians in the health literacy planning initiative, which will give them ownership and control of the use of health literacy strategies in their practice.

This study also showed a gap in health literacy knowledge and less than optimal health literacy experience. Although physicians in Grenada display strong intentions to use health literacy strategies with their patients, they are lacking in the requisite health literacy knowledge and experience. However, a major observation presents opportunities to address these deficits; most physicians (53%) in this study fell within the 25 to 44 age range and were in practice for approximately 11 years. This suggests that Grenada has a relatively young physician pool, which allows for ample time to present CMEs on health literacy strategies, and track patient health outcomes. As effective communication between physician and patient is one of the ways to improve poor health literacy, CME sessions can include the use of patient advocates to share their experiences as well as simulated exercises with SPs (Schmidt et al., 2017).

In addition, getting feedback from patients is also helpful to understand public perception of the healthcare system. These narratives can be used in the design of interventions to create a health literate organization (Brach, 2017). The inclusion of didactic lectures along with hands-on practice with SPs may result in a significant increase in health literacy knowledge as suggested by Pagels et al. (2015). In addition, Saunders et al. (2019) proposed that health literacy on-the-job opportunities can provide not only health literacy knowledge and experience but also bolster physicians' self-



efficacy regarding intentions to use health literacy strategies. For example, strategic placement of posters of teach-back and “Ask Me” can serve as reminders to stimulate conversation with patients. “Ask Me 3” is a program designed to elicit answers to three questions: “1) What is my problem?; 2) What do I need to do?; and 3) Why is it important for me to do this?” (Brach, 2017, p. 214). Physicians can use “Ask Me 3” as a guide to ensure that they provide the information that answers those questions.

### **Education**

Seventy percent of physicians in this study were trained in the Caribbean region, and although the specific medical schools were not documented, St. George’s University is one of the largest in the region. As such, the curriculum that serves approximately 6,300 students can be modified to include health literacy training throughout the basic and clinical sciences (St. George’s University, 2019). Currently, health literacy is taught as a part of the communication skills in a clinical setting in the last term of basic sciences. However, health literacy training with medical students is more effective when integrated throughout their training (Coleman et al., 2016). The design of the curriculum at St. George’s University is conducive to this format as it already includes didactic lectures, small group sessions, and the use of SPs. The use of SPs as a part of health literacy training has not only resulted in a significant increase in health literacy knowledge but also contributed to the continued use of the teach-back method in a clinical setting (Pagels et al., 2015). In addition, online and in-person educational opportunities for practicing physicians can validate their perceived behavioral control over intentions to use health literacy strategies with their patients. The increase in health literacy knowledge

and opportunities to practice in a simulated environment can improve their health literacy experience and self-efficacy (Lin, Fung, Nikoobakht, Burri, & Pakpour, 2017).

### **Further Research**

This study can be the beginning of the movement to improve health literacy of the people of Grenada and the Caribbean region. The topic will be discussed at the upcoming Caribbean Regional Conference of Psychologists to start the conversation with other colleagues. Locally, exploration of the influence of the subscales of attitudes, subjective norms, and perceived behavioral control with this group of physicians can be the focus of future research. Further research is needed in this region with other health professionals such as nurses and pharmacists because the improvement of health literacy stems from a collaborative approach. Researchers in other parts of the world have found that nursing professionals were also lacking in health literacy knowledge and experience and will benefit from training and support to enhance their health literacy skills (Guner & Elmekci, 2019; McCleary-Jones, 2016). Additionally, health literacy knowledge should be assessed in medical students in the region throughout their training, which will help to ensure that they begin their medical practice with the requisite knowledge.

In addition, research on the health literacy of the adult population in the different islands is also needed to establish a baseline and track outcomes. However, before that can happen, the traditional health literacy assessment tools, such as S-TOFHLA, NVS, and REALMS, need to be piloted in the region to ascertain whether they are valid for use with the different ethnic groups. Finally, because the HLKES-2 is a new assessment tool,

more research is needed with health professionals to improve the reliability of this instrument.

### **Social Change Implications**

The literature provides support for the impact that health literacy has on health outcomes—in particular, the harmful effects of low health literacy on the elderly, poor, those with low levels of education, chronic diseases, and members of certain ethnic groups (Todorovic et al., 2019). In this study, I investigated the physician’s role in the health literacy process before looking at the population in general because it was important to determine whether physicians were aware of their role and whether they were equipped to carry out that role. This study showed that although health literacy knowledge is minimal, and health literacy experience is suboptimal, intentions to use health literacy strategies are high, which can be the impetus for positive social change.

During this study, I had the opportunity to speak with the minister of health and the CMO of Grenada. Both parties recognized the importance of adequate levels of health literacy in the population and the role that health professionals play in the process. As such, they are awaiting the results of the research and the recommendations. As a scholar–practitioner, my goals to effect positive social change are to create health literacy training opportunities for the island’s physicians, present curricular modifications to St. George’s University to incorporate health literacy instruction throughout the curriculum, and continue health literacy research in the Caribbean region. The implementation of health literacy in the healthcare system in Grenada will be lengthy but with commitment

from stakeholders, there can be an improvement in health literacy of the population and ultimately their health outcomes (see Brach, 2017).

Working with the MoH to create health literacy interventions can assist practicing physicians in enhancing the physician-patient communication. These interventions will be evidence-based to ensure that they are in keeping with health literacy best practices. Improvement in physicians' health literacy knowledge and experience will enable patients not only to understand what is required to make informed health decisions but to be comfortable enough to ask questions in the therapeutic setting. Improving this relationship improves health literacy which positively affects health outcomes (Bahri, et al., 2018; Hedelund-Lausen et al., 2018). In addition, the inclusion of health literacy as an integral part of medical school curricula has been shown to provide medical students with the requisite knowledge and opportunity to build their health literacy skills (Brann & Bute, 2017; Coleman et al., 2016).

Finally, positive social change is a dynamic process, and the research in this region needs to continue so that gaps in the literature about the Caribbean are filled. One of the challenges of the literature review for this dissertation was the lack of research not only on this topic but also specifically in the Caribbean. As a scholar-practitioner, I intended for this study to create awareness of this need in the region and starting the conversation with Caribbean-based psychologists on collaborative research and capacity-building in the region.

## **Conclusion**

Globally, researchers have reported that health literacy in the general population is less than adequate and certain groups such as the elderly, poor, less educated, and minorities who are more vulnerable (Mayo-Gamble & Mouton, 2018; Todorovic et al., 2019). Health literacy is an important influence in the health outcomes of individuals and depends largely on communication and interaction with the healthcare system (Coleman & Fromer, 2015). Using the TPB as the theoretical framework, I explored the predictors of intentions to use health literacy strategies among physicians in Grenada. Health literacy knowledge, health literacy experience, and years of practice were identified as significant predictors of intentions to use health literacy strategies. Furthermore, intentions to use these strategies were high among this group of physicians. This finding can be used as a rationale to develop health literacy interventions for physicians and effect changes to the local medical school's basic and clinical sciences curriculum.

## References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11–39). New York, NY: Springer Nature. doi:10.1007/978-3-642-69746-3\_2
- Ali, N. K. (2013). Are we training residents to communicate with low health literacy patients? *Journal of Community Hospital Internal Medicine Perspectives*, 2(4), 1–6. doi:10.3402/jchimp.v2i4.19238
- Ali, N. A., Ferguson, R. P., Mitha, S., & Hanlon, A. (2014). Do medical trainees feel confident communicating with low health literacy patients? *Journal of Community Hospital Internal Medicine Perspectives*, 4(2), 1–5. doi:10.3402/jchimp.v4.22893
- Al-Sayah, F., Majumdar, S. R., Egede, L. E., & Johnson, J. A. (2015). Associations between health literacy and health outcomes in a predominantly low-income African American population with type 2 diabetes. *Journal of Health Communication*, 20(5), 581–588. doi:10.1080/10810730.2015.1012235
- American Psychological Association. (2010). *Ethical principles of psychologists and code of conduct including 2010 amendments*. <http://www.apa.org>
- Anderson, N. H. (1971). Integration theory and attitude change. *Psychological Review*, 78(3), 171–206. doi:10.1037/h0030834
- Askelson, N. M., Campo, S., Smith, S., Lowe, J. B., Dennis, L., & Andsager, J. (2011). Assessing physicians' intentions to talk about sex when they vaccinate nine-year-

old to 15-year-old girls against HPV. *Sex Education*, 11(4), 431–441.

doi:10.1080/14681811.2011.595252

Australia Institute of Health and Welfare. (2019). *Australia's health 2018*.

<https://www.aihw.gov.au>

Bahri, N., Saljooghi, S., Noghabi, A. D., & Moshki, M. (2018). Effectiveness of the teach-back method in improving self-care activities in postmenopausal women.

*Menopausal Review /Przegląd Menopauzalny*, 17(1), 5–10.

doi:10.5114/pm.2018.74896

Baker, D. W., Williams, M. V., Parker, R. M., Gazmararian, J. A., & Nurss, J. (1999).

Development of a brief test to measure functional health literacy. *Patient*

*Education and Counseling*, 38, 33–42. doi:10.1016/S0738-3991(98)00116-5

Bass, P. F., 3rd, Wilson, J. F., Griffith, C. H., & Barnett, D. R. (2002). Residents' ability to identify patients with poor literacy skills. *Academic Medicine: Journal of The*

*Association of American Medical Colleges*, 77(10), 1039–1041.

doi:10.1097/00001888-200210000-00021

Batista, M. J., Lawrence, H. P., & de Sousa, M. (2017). Oral health literacy and oral

health outcomes in an adult population in Brazil. *BMC Public Health*, 18(1), 60-

70. doi:10.1186/s12889-017-4443-0

Batista de Araújo, I. M., Ferreira Jesus, R. A., de Lurdes Teixeira, M., Santos Cunha, A.

R., da Silva Santos, F. M., & Fernandes Miranda, S. R. (2018). Health literacy of patients with hypertension and diabetes in a northern region of Portugal. *Revista*

*de Enfermagem Referência*, 4(18), 73–82. doi:10.12707/RIV18008

- Baumann, S., Gaertner, B., Schnuerer, I., Haberecht, K., John, U., & Freyer-Adam, J. (2015). Belief incongruence and the intention–behavior gap in persons with at-risk alcohol use. *Addictive Behaviors, 48*, 5–11.  
doi:10.1016/j.addbeh.2015.04.007
- Berkman, N., Davis, T., & McCormack, L. (2010). Health literacy: What is it? *Journal of Health Communication, 15*, 9–19. doi:10.1080/10810730.2010.499985
- Bertakis, K. D., Franks, P., & Epstein, R. M. (2009). Patient-centered communication in primary care: Physician and patient gender and gender concordance. *Journal of Women's Health, 18*(4), 539–545. doi:10.1089/jwh.2008.0969
- Bhochhibhoya, A., & Branscum, P. (2018). The application of the theory of planned behavior and the integrative behavioral model towards predicting and understanding alcohol-related behaviors: A systematic review. *Journal of Alcohol & Drug Education, 62*(2), 39–63. <https://www.jadejournal.com>
- Binh, T. Q., Phuong, P. T., & Nhung, B. T. (2015). Knowledge and associated factors towards type 2 diabetes among a rural population in the Red River Delta region, Vietnam. *Rural & Remote Health, 15*(3), 3275. Retrieved from <https://www.rrh.org.au/>
- Bittner, A., Bittner, J., Jonietz, A., Dybowski, C., & Harendza, S. (2016). Translating medical documents improves students' communication skills in simulated physician-patient encounters. *BMC Medical Education, 16*(72), 1-7.  
doi:10.1186/s12909-016-0594-4



- Bolívar, F. J. V., González, M. P., Martos, H. M., García, I. C., & Duránte, J. T. (2018). Communication with patients and the duration of family medicine consultations. *Atención Primaria, 50*(10), 621-628. doi:10.1016/j.aprim.2017.07.001
- Bostock, S., & Steptoe, A. (2012). Association between low functional health literacy and mortality in older adults: Longitudinal cohort study. *British Medical Journal, 344*, e 1602. doi:10.1136/bmj.e1602
- Bourne, P. A., Morris, C., Charles, C. A., Eldemire-Shearer, D., Kerr-Campbell, M. D., & Crawford, T. V. (2010). Health literacy and health seeking behavior among older men in a middle-income nation. *Patient Related Outcome Measures, 1*, 39–49. doi:10.2147/prom.s11141
- Burkholder, G. (n.d.). *Sample size analysis for quantitative studies* [Class handout]. Walden University, Minneapolis, MN.
- Brach, C. (2017). The journey to become a health literate organization: A snapshot of health system improvement. *Studies in Health Technology and Informatics, 240*, 203-237. <https://www.iospress.nl/>
- Brach, C., Dreyer, B., Schyve, P., Hernandez, L. N., Baur, C., Lemerise, A. J., & Parker, R. (2012). *Attributes of a health literate organization* [White paper]. <http://nam.edu>
- Brann, M., & Bute, J. J. (2017). Communicating to promote informed decisions in the context of early pregnancy loss. *Patient Education and Counseling, 100*(12), 2269–2274. doi:10.1016/j.pec.2017.06.016

- Briglia, E., Perlman, M., & Weissman, M. A. (2015). Integrating health literacy into organizational structure. *Physician Leadership Journal*, 2(2), 66-69.  
<https://www.physicianleaders.org>
- Brown, K., Avis, M., & Hubbard, M. (2007). Health beliefs of African–Caribbean people with type 2 diabetes: A qualitative study. *British Journal of General Practice*, 57(539), 461- 469. <https://bjgp.org>
- Bylund, C. L., Alyafei, K., Afana, A., Al-Romaihi, S., Yassin, M., Elnashar, M., ... Al-Khal, A. (2017). Satisfaction with a 2-day communication skills course culturally tailored for medical specialists in Qatar. *Journal of Family & Community Medicine*, 24(2), 122–127. doi:10.4103/2230-8229.205118
- Cafiero, M. (2013). Nurse practitioners’ knowledge, experience, and intention to use health literacy strategies in clinical practice. *Journal of Health Communication*, 18, 70–81. doi:10.1080/10810730.2013.825665
- Canadian Council on Learning. (2008). *Health literacy in Canada: A healthy understanding*. <http://www.en.copian.ca/>
- Caruso, R., Magon, A., Baroni, I., Dellafiore, F., Arrigoni, C., Pittella, F., & Ausili, D. (2018). Health literacy in type 2 diabetes patients: A systematic review of systematic reviews. *Acta Diabetologica*, 55(1), 1–12. doi:10.1007/s00592-017-1071-1
- Carvajal, D. N., Gioia, D., Mudafort, E. R., Brown, P. B., & Barnet, B. (2017). Family planning: How can primary care physicians best support contraceptive decision

making? A qualitative study exploring the perspectives of Baltimore latinas.

*Women's Health Issues*, 27, 158–166. doi:10.1016/j.whi.2016.09.015

Centers for Disease Control and Prevention. (2015). *Data and statistics*.

<http://www.cdc.gov/>

Centers for Disease Control and Prevention. (2017). *Health literacy*.

<https://www.cdc.gov/>

Centrella-Nigro, A. M., & Alexander, C. (2017). Using the teach-back method in patient education to improve patient satisfaction. *The Journal of Continuing Education in Nursing*, 48(1), 47–52. doi:10.3928/00220124-20170110-10

Chajae, F., Pirzadeh, A., Hasanzadeh, A., & Mostafavi, F. (2018). Relationship between health literacy and knowledge among patients with hypertension in Isfahan province, Iran. *Electronic Physician*, 10(3), 6470–6477. doi:10.19082/6470

Chou, Y.-J., & Shih, C.-M. (2018). Using the health belief model to predict those seeking treatment for hypoactive sexual desire disorder among premenopausal women. *Taiwanese Journal of Obstetrics & Gynecology*, 57(6), 791–795.

doi:10.1016/j.tjog.2018.10.003

Choudhry, N. K., Fletcher, R. H., & Soumerai, S. B. (2005). Systematic review: The relationship between clinical experience and quality of health care. *Annals of Internal Medicine*, 142(4), 260–273. doi:10.7326/0003-4819-142-4-200502150-00008 /

- Clifford, S., & Jerit, J. (2016). Cheating on political knowledge questions in online surveys. *Public Opinion Quarterly*, 80(4), 858-887. <https://doi-org.ezp.waldenulibrary.org/10.1093/poq/nfw030>
- Coleman, C. (2011). Article: Teaching health care professionals about health literacy: A review of the literature. *Nursing Outlook*, 59, 70–78.  
doi:10.1016/j.outlook.2010.12.004
- Coleman, C. A., & Appy, S. (2012). Health literacy teaching in US medical schools, 2010. *Family Medicine*, 44(7), 504–507. <https://journals.stfm.org/familymedicine/>
- Coleman, C. A., & Fromer, A. (2015). A health literacy training intervention for physicians and other health professionals. *Family Medicine*, 47(5), 388–392.  
<https://journals.stfm.org/familymedicine/>
- Coleman, C. A., Nguyen, N. T., Garvin, R., Sou, C., & Carney, P. A. (2016). Health literacy teaching in U.S. family medicine residency programs: A national survey. *Journal of Health Communication*, 21, 51–57.  
doi:10.1080/10810730.2015.1131774
- Coleman, C. A., Peterson-Perry, S., & Bumsted, T. (2016). Long-term effects of a health literacy curriculum for medical students. *Family Medicine*, 48(1), 49–53.  
<https://journals.stfm.org/familymedicine/>
- Cormier, C. M. (2006). *Health literacy: The knowledge and experiences of senior level baccalaureate nursing students* (Doctoral dissertation). doi:10.3928/01484834-20090416-02

- Cormier, C. M., & Kotrlik, J. W. (2009). Health literacy knowledge and experiences of senior baccalaureate nursing students. *The Journal of Nursing Education, 48*(5), 237–248. doi:10.3928/01484834-20090416-02
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. California: Sage publications.
- Daniel, J. (2012). Choosing the size of the sample. In Daniel, J. *Sampling essentials: Practical guidelines for making sampling choices* (pp. 236-253). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781452272047
- Das, S., Mia, M.D., Hanifi, S.M.A., Hoque, S., & Bhuiya, A. (2017). Health literacy in a community with low levels of education: Findings from Chakaria, a rural area of Bangladesh. *BMC Public Health, 17*(1), 1–10. doi:10.1186/s12889-017-4097-y
- Davis, T. C., Lon, S.W., Jackson, R. H., Mayeaux, E. J., George, R. B., Murphy, P. W., & Crouch, M.A. (1993). Rapid estimate of adult literacy in medicine: A shortened screening instrument. *Family Medicine, 25*(6), 391–395.  
<https://journals.stfm.org/familymedicine/>
- DeWalt, D. A. (2007). Low health literacy: Epidemiology and interventions. *North Carolina Medical Journal, 68*(5), 327–330. <http://www.ncmedicaljournal.com/>
- Doak, C., Doak, L., & Root, J. (1996). *Teaching patients with low health literacy skills*. Philadelphia, PA: J. B. Lippincott.
- Domigan, J., Glassman, T., Mulrow, P., Reindl, D., & Diehr, A. (2014). Physicians' attitudes toward discussing motor vehicle safety with their patients. *American Journal of Health Studies, 29*(3), 230–239. <http://www.va-ajhs.com/>

- Du, S., Zhou, Y., Fu, C., Wang, Y., Du, X., & Xie, R. (2018). Health literacy and health outcomes in hypertension: An integrative review. *International Journal of Nursing Sciences*, *5*(3), 301–309. doi:10.1016/j.ijnss.2018.06.001
- Erunal, M., Ozkaya, B., Mert, H., & Kucukguclu, O. (2018). Investigation of health literacy levels of nursing students and affecting factors. *International Journal of Caring Sciences*, *11*(3), 1386–1395.  
<http://www.internationaljournalofcaringsciences.org/>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149–1160. doi:10.3758/brm.41.4.1149
- Field, A. (2009). *Discovering statistics using SPSS* (3<sup>rd</sup> ed.). London: Sage Publications
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5<sup>th</sup> ed.). Los Angeles, CA: Sage Publications
- Finset, A., Ekeberg, O., Eide, H., & Aspegren, K. (2003). Long term benefits of communication skills training for cancer doctors. *Psycho-Oncology*, *12*(7), 686–693. doi:10.1002/pon.691
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley
- Flowers, E. P., Freeman, P., & Gladwell, V. F. (2017). The development of three questionnaires to assess beliefs about green exercise. *International Journal of*

*Environmental Research and Public Health*, 14(10), 1–21.

doi:10.3390/ijerph14101172

Foster, J., Idossa, L., Mau, L. W., & Murphy, E. (2016). Applying health literacy principles: Strategies and tools to develop easy-to-read patient education resources. *Clinical Journal of Oncology Nursing*, 20(4), 433–436.

doi:10.1188/16.CJON.433-436

Frankfort-Nachmias, C., & Leon-Guerrero, A. (2018). *Social statistics for a diverse society*. Thousand Oaks, CA: Sage Publications.

Fransen, M. P., Beune, E. J., Baim-Lance, A. M., Bruessing, R. C., & Essink-Bot, M. (2015). Diabetes self-management support for patients with low health literacy: Perceptions of patients and providers. *Journal of Diabetes*, 7(3), 418–425.

doi:10.1111/1753-0407.12191

Garcia-Retamero, R., Wicki, B., Cokely, E. T., & Hanson, B. (2014). Factors predicting surgeons' preferred and actual roles in interactions with their patients. *Health Psychology*, 33(8), 920–928. doi:10.1037/hea0000061

Geboers, B., de Winter, A. F., Spoorenberg, S. L. W., Wynia, K., & Reijneveld, S. A. (2016). The association between health literacy and self-management abilities in adults aged 75 and older, and its moderators. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation*, 25(11), 2869–2877. doi:10.1007/s11136-016-1298-2

Geboers, B., Uiters, E., Reijneveld, S. A., Jansen, C. J. M., Almansa, J., Nooyens, A. C. J., . . . & Picavet, H. S. J. (2018). Health literacy among older adults is associated

- with their 10-years' cognitive functioning and decline - the Doetinchem Cohort Study. *BMC Geriatrics*, 18(77), 1-7. doi:/10.1186/s12877-018-0766-7
- Glanz, K., Rimer, B. K., & Viswanath, K. (Eds.). (2015). *Health behavior and health education: Theory, research, and practice* (5th ed.). San Francisco, CA: Jossey-Bass.
- Goggins, K., Wallston, K. A., Mion, L., Cawthon, C., & Kripalani, S. (2016). What patient characteristics influence nurses' assessment of health literacy? *Journal of Health Communication*, 21(2), 105–108. doi:10.1080/10810730.2016.1193919
- Green, J. A., Gonzaga, A. M., Cohen, E. D., & Spagnoletti, C. L. (2014). Addressing health literacy through clear health communication: A training program for internal medicine residents. *Patient Education and Counseling*, 95(1), 76–82. doi:10.1016/j.pec.2014.01.004
- Greiner, B. H., Croff, J., Wheeler, D., & Miller, B. (2018). Mediterranean diet Adherence in cardiac patients: A cross-sectional study. *American Journal of Health Behavior*, 42(6), 3–10. doi:10.5993/AJHB.42.6.1
- Groves, R. M., Fowler, F. J. Jr., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). Hoboken, NJ: John Wiley & Sons.
- Güner, M. D., & Ekmekci, P. E. (2019). A survey study evaluating and comparing the health literacy knowledge and communication skills used by nurses and physicians. *Inquiry: A Journal of Medical Care Organization, Provision and Financing*, 56, 1-10. doi:10.1177/0046958019865831



- Gwon, S.H., Yan, G., & Kulbok, P. A. (2017). South Korean adolescents' intention to smoke. *American Journal of Health Behavior, 41*(2), 163–170.  
doi:10.5993/AJHB.41.2.7
- Hahn, E. A., Burns, J. L., Jacobs, E. A., Ganschow, P. S., Garcia, S. F., Rutsohn, J. P., & Baker, D. W. (2015). Health literacy and patient-reported outcomes: A cross-sectional study of underserved English- and Spanish-speaking patients with Type 2 diabetes. *Journal of Health Communication, 20*(2), 4–15.  
doi:10.1080/10810730.2015.1061071
- Hall, J. A., Gulbrandsen, P., & Dahl, F. A. (2014). Physician gender, physician patient-centered behavior, and patient satisfaction: A study in three practice settings within a hospital. *Patient Education and Counseling, 95*(3), 313–318.  
doi:10.1016/j.pec.2014.03.015
- Hall, P., Keely, E., Dojeiji, S., Byszewski, A., & Marks, M. (2004). Communication skills, cultural challenges and individual support: Challenges of international medical graduates in a Canadian healthcare environment. *Medical Teacher, 26*(2), 120–125. doi:10.1080/01421590310001653982
- Harrington, M., & Engelke, M. K. (2016). Health literacy: Perceptions and experiences of pediatric nephrology interprofessional team members. *Nephrology Nursing Journal, 43*(1), 15–26. <https://www.annanurse.org/>
- Harper, W., Cook, S., & Makoul, G. (2007). Teaching medical students about health literacy: 2 Chicago initiatives. *American Journal of Health Behavior, 31*(1), 111–114. doi:10.5993/ajhb.31.s1.14

- Hartman, E. (2014). *Nurses lack skills to teach: Increasing undergraduate nursing skills related to patient education* (Doctoral dissertation).  
<https://ezp.waldenulibrary.org/>
- Hasking, P., & Schofield, L. (2015). Examining alcohol consumption with the theory of planned behaviour: Do health and alcohol knowledge play a role? *Psychology, Health & Medicine*, *20*(7), 838–845. doi:10.1080/13548506.2014.969748
- Hedelund-Lausen, L., Smith, S. K., Cai, A., Meiser, B., Yanes, T., Ahmad, R., & Rowlands, G. (2018). How is health literacy addressed in primary care? Strategies that general practitioners use to support patients. *Journal of Communication in Healthcare*, *11*(4), 278–287.  
doi:10.1080/17538068.2018.1531477
- Hersh, L., Salzman, B., & Snyderman, D. (2015). Health literacy in primary care practice. *American Family Physician*, *92*(2), 118–124. <https://www.aafp.org/>
- Holman, C. K., Weed, L. D., & Kelley, S. P. (2019). Improving provider use of the teach-back method. *Journal for Nurses in Professional Development*, *35*(1), 52-53. doi:10.1097/NND.0000000000000521
- Institute of Medicine. (2004). *Health literacy: A prescription to end confusion*.  
<http://www.nationalacademies.org/>
- Jacobs, R. J., Lou, J. Q., Ownby, R. L., & Caballero, J. (2016). A systematic review of eHealth interventions to improve health literacy. *Health Informatics Journal*, *22*(2), 81–98. doi.org/10.1177/1460458214534092

- Jahan, S., & Henary, B. (2013). Attitudes of primary health care physician managers toward research: A pre-experimental study. *Australian Journal of Primary Health, 19*(2), 171–176. doi:10.1071/PY11146
- Janssen, S. M., & Lagro-Janssen, A. L. M. (2012). Physician's gender, communication style, patient preferences and patient satisfaction in gynecology and obstetrics: A systematic review. *Patient Education and Counseling, 89*(2), 221–226. doi:10.1016/j.pec.2012.06.034
- Javadzade, H., Larki, A., Tahmasebi, R., & Reisi, M. (2018). A theory-based self-care intervention with the application of health literacy strategies in patients with high blood pressure and limited health literacy: A protocol study. *International Journal of Hypertension, 2018*, 1–7. doi:10.1155/2018/4068538
- Jefferson, L., Bloor, K., & Hewitt, C. (2015). The effect of physician gender on length of patient consultations: observational findings from the UK hospital setting and synthesis with existing studies. *Journal of Royal Society of Medicine, 108*(4), 136-141. doi:10.1177/0141076814558522
- Joshi, C., Jayasinghe, U. W., Parker, S., Del Mar, C., Russell, G., Lloyd, J., Mazza, D., . . . Harris, M. F. (2014). Does health literacy affect patients' receipt of preventative primary care? A multilevel analysis. *BMC Family Practice, 15*, 171–181. doi:10.1186/s12875-014-0171-z
- Kam, L. Y. K., Knott, V. E., Wilson, C., & Chambers, S. K. (2012). Using the theory of planned behavior to understand health professionals' attitudes and intentions to

refer cancer patients for psychosocial support. *Psycho-Oncology*, 21(3), 316–323.

doi:10.1002/pon.1897

Karnoe, A., & Kayser, L. (2015). How is eHealth literacy measured and what do the measurements tell us? A systematic review. *Knowledge Management & E-Learning: An International Journal*, 7(4), 576-600.

doi:10.34105/j.kmel.2015.07.038

Kiene, S. M., Hopwood, S., Lule, H., & Wanyenze, R. K. (2014). An empirical test of the theory of planned behaviour applied to contraceptive use in rural Uganda. *Journal of Health Psychology*, 19(12), 1564–1575. doi:10.1177/1359105313495906

Kim, H., & Xie, B. (2017). Health literacy in the eHealth era: A systematic review of the literature. *Patient Education and Counseling*, 100(6), 1073–1082.

doi:10.1016/j.pec.2017.01.015

Kiyang, L.-N., Labrecque, M., Doualla-Bell, F., Turcotte, S., Farley, C., Bas, M. C., . . .

Légaré, F. (2015). Family physicians' intention to support women in making informed decisions about breast cancer screening with mammography: A cross-sectional survey. *BMC Research Notes*, 8, 1–7. doi:10.1186/s13104-015-1608-8

Knight, G. D. (2011). *An evaluation of the health literacy knowledge and experience of registered nurses in Georgia* (Doctoral dissertation).

<https://ezp.waldenulibrary.org/>

Koo, L. W., Horowitz, A. M., Radice, S. D., Wang, M. Q., & Kleinman, D. V. (2016).

Nurse practitioners' use of communication techniques: Results of a Maryland oral

health literacy survey. *PLoS ONE*, *11*(1), 1–16.

doi:10.1371/journal.pone.0146545

- Lai, A., Goto, A., & Rudd, R. (2015). Advancing health literacy from a system perspective: Health literacy training for healthcare professionals. *The European Health Psychologist*, *17*(6), 281–285. <https://ehps.net/>
- Lambert, M., Luke, J., Downey, B., Crengle, S., Kelaher, M., Reid, S., & Smylie, J. (2014). Health literacy: Health professionals' understandings and their perceptions of barriers that indigenous patients encounter. *BMC Health Services Research*, *14*(1), 614–624. doi: 10.1186/s12913-014-0614-1.
- Ledesma, R. D., Tosi, J. D., Diaz-Lazaro, C. M., & Poo, F. M. (2018). Predicting road safety behavior with implicit attitudes and the Theory of Planned Behavior. *Journal of Safety Research*, *66*, 187–194. doi:10.1016/j.jsr.2018.07.006
- Lee, C. F., Chiang, I. C., Hwang, F. M., Chi, L. K., & Lin, H. M. (2016). Using the theory of planned behavior to predict pregnant women's intention to engage in regular exercise. *Midwifery*, *42*, 80–86. doi:10.1016/j.midw.2016.09.014
- Lee, H. Y., Rhee, T. G., Kim, N. K., & Ahluwalia, J. S. (2015). Health literacy as a social determinant of health in Asian American immigrants: Findings from a population-based survey in California. *Journal of General Internal Medicine*, *30*(8), 1118–1124. doi:10.1007/s11606-015-3217-6
- Lepore, S., Nair, R., Davis, S., Wolf, R., Basch, C., Thomas, N., . . . Ullman, R. (2017). Patient and physician factors associated with undisclosed prostate cancer screening in a sample of predominantly immigrant black men. *Journal of*

*Immigrant & Minority Health*, 19(6), 1343–1350. doi:10.1007/s10903-016-0468-

1

Levkovich, I., Gewirtz-Meydan, A., Karkabi, K., & Ayalon, L. (2018). Views of family physicians on heterosexual sexual function in older adults. *BMC Family Practice*, 19 (86), 1-11. doi:10.1186/s12875-018-0770-1

Lewis, K.O., Morgan, J.E., Wang, L.L., Calderon, K., Rammel, J., & Ozer, M. (2014). Health literacy practices of physicians and patient care personnel in a hospital setting. *Journal of Contemporary Medical Education*, 2(4), 204–212.

doi:10.5455/jcme.20141122081418

Lin, C.-Y., Fung, X. C. C., Nikoobakht, M., Burri, A., & Pakpour, A. H. (2017). Using the theory of planned behavior incorporated with perceived barriers to explore sexual counseling services delivered by healthcare professionals in individuals suffering from epilepsy. *Epilepsy & Behavior*, 74, 124-129. doi:

10.1016/j.yebeh.2017.06.011

Linder, A.D., Harper, A., Jung, J., & Woodson-Smith, A. (2017). Ajzen's theory of planned behaviors attitude and intention and their impact on physical activity among college students enrolled in lifetime fitness courses. *College Student Journal*, 51(4), 550–560. <https://www.projectinnovation.com>

- Lubetkin, E. I., Zabor, E. C., Isaac, K., Brennessel, D., Kemeny, M. M., & Hay, J. L. (2015). Health Literacy, information seeking, and trust in information in Haitians. *American Journal of Health Behavior, 39*(3), 441–450.  
doi:10.5993/AJHB.39.3.16
- Mackert, M., Ball, J., & Lopez, N. (2011). Health literacy awareness training for healthcare workers: Improving knowledge and intentions to use clear communication techniques. *Patient Education & Counseling, 85*(3), 225–228.  
doi:10.1016/j.pec.2011.02.022
- Magnezi, R., Bergman, L. C., & Urowitz, S. (2015). Would your patient prefer to be considered your friend? Patient preferences in physician relationships. *Health Education & Behavior, 42*(2), 210–219. doi:10.1177/1090198114547814.
- Malik, M., Zaidi, R.Z., & Hussain, A. (2017) Health literacy as global public health concern: A systematic review. *Journal of Pharmacology & Clinical Research, 4*(2), 1-6. doi: 10.19080/JPCR.2017.04.555632
- Martinez-Mesa, J., Gonzalez-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study? *Anais Brasileiros de Dermatologia, 91*(3), 326–330. doi:10.1590/abd1806-4841.20165254
- Mast, M. S., & Kadji, K. K. (2018). How female and male physicians' communication is perceived differently. *Patient Education & Counseling, 101*(9), 1697–1701.  
doi:10.1016/j.pec.2018.06.003

- May, M., Brousseau, D. C., Nelson, D. A., Flynn, K. E., Wolf, M. S., Lepley, B., & Morrison, A. K. (2018). Why parents seek care for acute illness in the clinic or the ED: The role of health literacy. *Academic Pediatrics, 18*(3), 289–296.  
doi:10.1016/j.acap.2017.06.010
- May, W., Park, J.H., & Lee, J. P. (2009). A ten-year review of the literature on the use of standardized patients in teaching and learning: 1996-2005. *Medical Teacher, 31*(6), 487–492. doi:10.1080/01421590802530898
- Mayo-Gamble, T. L., & Mouton, C. (2018). Examining the association between health literacy and medication adherence among older adults. *Health Communication, 33*(9), 1124–1130. doi:10.1080/10410236.2017.1331311
- McCleary-Jones, V. (2016). A systematic review of the literature on health literacy in nursing education. *Nurse Educator, 41*(2), 93–97.  
doi:10.1097/NNE.0000000000000204
- McClintock, H., Schrauben, S., Andrews, A., & Wiebe, D. (2017). Measurement of health literacy to advance global health research: A study based on demographic and health surveys in 14 sub-Saharan countries. *Lancet Global Health, S1*, S18.  
doi:10.1016/S2214-109X(17)30125-0
- McDonald, M., & Shenkman, L. J. (2018). Health literacy and health outcomes of adults in the United States: Implications for providers. *Internet Journal of Allied Health Sciences & Practice, 16*(4), 1–5. <https://nsuworks.nova.edu/ijahsp/>
- McNaughton, C. D., Korman, R. R., Kabagambe, E. K., & Wright, S. W. (2015). Health literacy and blood glucose among Guyanese emergency department patients



without diagnosed diabetes: A cross-sectional study. *Diabetology & Metabolic Syndrome*, 7(31), 1–7. doi:10.1186/s13098-015-0028-1

Mehzabin, R., Hossain, K. J., Moniruzzaman, M., & Sayeed, S. K. J. B. (2019).

Association of functional health literacy with glycemic control: A cross sectional study in urban population of Bangladesh. *Journal of Medicine*, 20(1), 19–24. doi:10.3329/jom.v20i1.38816

Morris, C., James, K., Laws, H., & Eldemire-Shearer, D. (2011). Health status and health-seeking behaviour of Jamaican men fifty-five years and over. *West Indian Medical Journal*, 60(3), 322–329. <https://www.mona.uwi.edu/fms/wimj/>

Mosley, C. M., & Taylor, B. J. (2017). Integration of health literacy content into nursing curriculum utilizing the health literacy expanded model. *Teaching & Learning in Nursing*, 12(2), 109–116. doi:10.1016/j.teln.2016.12.005

Mottus, R., Murray, C., Starr, J. M., Johnson, W., Wolf, M. S., Deary, I. J. (2014). Towards understanding the links between health literacy and physical health. *Health Psychology*, 33(2), 164–173. doi:10.1037/a0031439

Myers, L., & Murray, R. K. (2019). Overcoming health literacy barriers to improve asthma inhaler therapy adherence. *Annals of the American Thoracic Society*, 16(2), 182–186. doi:10.1513/AnnalsATS.201805-338PS

Naccarella, L., & Murphy, B. (2018). Key lessons for designing health literacy professional development courses. *Australian Health Review*, 42(1), 36-38. <https://doi-org.ezp.waldenulibrary.org/10.1071/AH17049>

- Nantha, Y. S., Wee, L. H., & Chan, C. M. (2018). Assessing predictors of intention to prescribe sick leave among primary care physicians using the theory of planned behaviour. *BMC Family Practice, 19*, 18–28. doi:10.1186/s12875-017-0690-5
- National Assessment of Adult Literacy. (2003). *Health literacy*. <https://nces.ed.gov/>
- National Center for Education Statistics. (n.d.). *National assessment of adult literacy*. <https://nces.ed.gov/>
- National Institutes of Health. (n.d.). *Use the teach-back method*. <https://www.niddk.nih.gov/>
- Nesari, M. (2017). *Health literacy: Knowledge and experiences of Iranian registered nurses* (Doctoral dissertation). doi:10.7939/R3C53FD1C
- Neter, E., & Brainin, E. (2019). Association between health literacy, eHealth literacy, and health outcomes among patients with long-term conditions: A systematic review. *European Psychologist, 24*(1), 68–81. doi:10.1027/1016-9040/a000350
- Nierengarten, M. B. (2018). Improving health literacy: Ob/gyns can take simple steps to help patients understand their personal health information, promoting better outcomes. *Contemporary OB/GYN, 63*(6), 42–45. <https://www.contemporaryobgyn.net/>
- Noro, I., Roter, D. L., Kurosawa, S., Miura, Y., & Ishizaki, M. (2018). The impact of gender on medical visit communication and patient satisfaction within the Japanese primary care context. *Patient Education and Counseling, 101*(2), 227–232. doi:10.1016/j.pec.2017.08.001

- Oh, E.G., Lee, H. J., Yang, Y.L., & Kim, Y. M. (2019). Effectiveness of discharge education with the teach-back method on 30-Day readmission: A systematic review. *Journal of Patient Safety*. doi:10.1097/PTS.0000000000000596
- Oliveira, D., Bosco, A., & di Lorito, C. (2019). Is poor health literacy a risk factor for dementia in older adults? Systematic literature review of prospective cohort studies. *Maturitas*, *124*, 8–14. doi:10.1016/j.maturitas.2019.03.010
- Osborn, H. (2013). *Health literacy from A to Z*. Burlington, MA: Jones & Bartlett Learning
- Ousseine, Y. M., Butow, P. N., Fenaux, P., Dring, R., Festy, P., Restivo, L., Norbert, V., & Mancini, J. (2018). Association between health literacy, communication and psychological distress among myelodysplastic syndromes patients. *Leukemia Research*, *73*, 44–50. doi: 10.1016/j.leukres.2018.08.020
- Ousseine, Y. M., Durand, M.-A., Bouhnik, A.-D., Smith, A., & Mancini, J. (2019). Multiple health literacy dimensions are associated with physicians' efforts to achieve shared decision-making. *Patient Education and Counseling*. doi: 10.1016/j.pec.2019.05.015
- Paasche-Orlow, M. K., Parker, R. M., Gazmararian, J. A., Nielsen-Bohlman, L. T., & Rudd, R. R. (2005). The prevalence of limited health literacy. *Journal of General Internal Medicine*, *20*(2), 175–184. doi:10.1111/j.1525-1497.2005.40245.x
- Pagels, P., Kindratt, T., Arnold, D., Brandt, J., Woodfin, G., & Gimpel, N. (2015). Training family medicine residents in effective communication skills while utilizing promotoras as standardized patients in OSCEs: A health literacy

curriculum. *International Journal of Family Medicine*, 2015, 1–9.

doi:10.1155/2015/129187

Pan American Health Organization. (2017). *Health in the Americas, country volume, Grenada*. <https://www.paho.org/>

Parker, R. M., Baker, D. W., Williams, M. V., & Nurss, J. R. (1995). The test of functional health literacy in adults: A new instrument for measuring patients' literacy skills. *Journal of General Internal Medicine*, 10, 537–541.

doi:10.1007/bf02640361

Prabhu, A. V., Kim, C., Crihalmeanu, T., Hansberry, D. R., Agarwal, N., DeFrances, M. C., & Trejo Bittar, H. E. (2017). An online readability analysis of pathology-related patient education articles: an opportunity for pathologists to educate patients. *Human Pathology*, 65, 15-20. doi:10.1016/j.humpath.2017.04.020

Pratt, M., & Searles, G. E. (2017). Using visual aids to enhance physician-patient discussions and increase health literacy. *Journal of Cutaneous Medicine & Surgery*, 21(6), 497–501. doi:10.1177/1203475417715208

Presseau, J., Johnston, M., Francis, J. J., Hrisos, S., Stamp, E., Steen, N., . . . Eccles, M. P. (2014). Theory-based predictors of multiple clinician behaviors in the management of diabetes. *Journal of Behavioral Medicine*, 37(4), 607–620.

doi:10.1007/s10865-013-9513-x

Pushparajah, D. S., Manning, E., Michels, E., & Arnaudeau-Begard, C. (2018). Value of developing plain language summaries of scientific and clinical articles: A survey

of patients and physicians. *Therapeutic Innovation & Regulatory Science*, 52(4), 474–481. doi:10.1177/2168479017738723

Quimby-Worrell, C. (2019). Health literacy and type 2 diabetes in Barbados. *The Qualitative Report*, 24(2), 319–332. <https://nsuworks.nova.edu>

Rajah, R., Hassali, M. A., & Lim, C. J. (2017). Health literacy-related knowledge, attitude, and perceived barriers: A cross-sectional study among physicians, pharmacists, and nurses in public hospitals of Penang, Malaysia. *Frontiers in Public Health*, 5, 281–287. doi:10.3389/fpubh.2017.00281

Roberts, D. M., Reid, J. R., Conner, A. L., Barrer, S., Miller, K. H., & Ziegler, C. (2012). A replicable model of a health literacy curriculum for a third-year clerkship. *Teaching and Learning in Medicine*, 24(3), 200–210. doi:10.1080/10401334.2012.692261

Rogers, E. S., Wallace, L. S., & Weiss, B. D. (2006). Misperceptions of medical understanding in low-literacy patients: implications for cancer prevention. *Cancer Control: Journal of The Moffitt Cancer Center*, 13(3), 225–229. doi:10.1177/107327480601300311

Ryan-Madonna, M., Levin, R. F., & Lauder, B. (2019). Effectiveness of the teach-back method for improving caregivers' confidence in caring for hospice patients and decreasing hospitalizations. *Journal of Hospice & Palliative Nursing*, 21(1), 61–70. doi:10.1097/NJH.0000000000000492

- Saunders, C., Palesy, D., & Lewis, J. (2019). Systematic review and conceptual framework for health literacy training in health professions education. *Health Professions Education, 5*(1), 13–29. doi:10.1016/j.hpe.2018.03.003
- Schlichting, J. A., Quinn, M. T., Heuer, L. J., Schaefer, C. T., Drum, M. L., & Chin, M. H. (2007). Provider perceptions of limited health literacy in community health centers. *Patient Education and Counseling, 69*, 114–120. doi:10.1016/j.pec.2007.08.003
- Schmidt, E., Schöpf, A. C., & Farin, E. (2017). What is competent communication behaviour of patients in physician consultations? – Chronically-ill patients answer in focus groups. *Psychology, Health & Medicine, 22*(8), 987–1000. doi:10.1080/13548506.2016.1248450
- Seurer, A. C., & Vogt, H. B. (2013). Low health literacy: A barrier to effective patient care. *South Dakota Medicine: The Journal of The South Dakota State Medical Association, 66*(2), 51–57. <https://www.sdsma.org>
- Shamblen, S. R., Atwood, K., Scarbrough, W., Collins, D. A., Rindfleisch, A., Kligler, B., & Gaudet, T. (2018). Perceived behavioral control as a key to integrative medicine. *Journal of Evidence-Based Integrative Medicine, 23*, 1–9. doi:10.1177/2515690X18801581
- Sharifirad, G., Mostafavi, F., Reisi, M., Mahaki, B., Javadzade, H., Heydarabadi, A. B., & Esfahani, M. N. (2015). Predictors of nurses' intention and behavior in using health literacy strategies in patient education based on the theory of planned behavior. *Materia Socio-Medica, 27*(1), 22–26. doi:10.5455/msm.2014.27.22-26

- Shin, D. W., Roter, D. L., Roh, Y. K., Hahm, S. K., Cho, B., & Park, H.-K., (2015). Physician gender and patient centered communication: The moderating effect of psychosocial and biomedical case characteristics. *Patient Education & Counseling*, 98(1), 55-60. doi:10.1016/j.pec.2014.10.008
- Singh, S., Acharya, S. D., Kamath, A., Ullal, S. D., & Urval, R. P. (2018). Health literacy status and understanding of the prescription instructions in diabetic patients. *Journal of Diabetes Research*, 2018, 1–5. doi:10.1155/2018/4517243
- Singh, S. G., & Aiken, J. (2017). The effect of health literacy level on health outcomes in patients with diabetes at a type v health centre in Western Jamaica. *International Journal of Nursing Sciences*, 4(3), 266–270. doi:10.1016/j.ijnss.2017.06.004
- Sørensen, K., Pelikan, J. M., Röthlin, F., Ganahl, K., Slonska, Z., Doyle, G., ... Brand, H. (2015). Health literacy in Europe: Comparative results of the European health literacy survey (HLS-EU). *European Journal of Public Health*, 25(6), 1053–1058. doi:10.1093/eurpub/ckv043
- St. George's University. (2019). *Enrollment and demographics*. <https://www.sgu.edu/>
- St. George's University. (2018). *Enrollment and demographics: School of medicine*. <https://www.sgu.edu/>
- Tamura-Lis, W. (2013). Teach-Back for quality education and patient safety. *Urologic Nursing*, 33(6), 267–298. doi:10.7257/1053-816X.2013.33.6.267
- Todorovic, N., Jovic-Vranes, A., Djikanovic, B., Pilipovic-Broceta, N., Vasiljevic, N., Lucic-Samardzija, V., & Peric, A. (2019). Assessment of health literacy in the adult population registered to family medicine physicians in the Republic of

- Srpska, Bosnia and Herzegovina. *European Journal of General Practice*, 25(1), 32–38. doi: 10.1080/13814788.2019.1571579
- Torres, R., & Nichols, J. (2014). Health literacy knowledge and experiences of associate degree nursing students: A pedagogical study. *Teaching & Learning in Nursing*, 9(2), 84–92. doi:10.1016/j.teln.2013.11.003
- Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin*, 133,(5), 859–883. doi:10.1037/0033-2909.133.5.859
- Trezona, A., Rowlands, G., & Nutbeam, D. (2018). Progress in implementing national policies and strategies for health literacy-What have we learned so far? *International Journal of Environmental Research and Public Health*, 15(7), 1–17. doi:10.3390/ijerph15071554
- Trochim, W. M. (2006). *The research methods knowledge base*.  
<http://socialresearchmethods.net/>
- Vandenbosch, J., Van den Broucke, S., Schinckus, L., Schwarz, P., Doyle, G., Pelikan, J., . . . Terkildsen-Maindal, H. (2018). The impact of health literacy on diabetes self-management education. *Health Education Journal* 77(3), 349-362. doi: 10.1177/0017896917751554
- Van den Broucke, S. (2014). Health literacy: a critical concept for public health. *Archives of Public Health*, 72(1), 10–12. doi:10.1186/2049-3258-72-10
- van der Heide, I., Poureslami, I., Mitic, W., Shum, J., Rootman, I., & FitzGerald, J. M. (2018). Health literacy in chronic disease management: A matter of interaction.



*Journal of Clinical Epidemiology*, 102, 134–138.

doi:10.1016/j.jclinepi.2018.05.010

- Wahab, A., Ali, A., Nazir, S., Ochoa, L., Khan, H., Khan, M., ... Smith, S. J. (2018). A QI initiative for bridging the health literacy gap by educating internal medicine residents at a community hospital. *Journal of Community Hospital Internal Medicine Perspectives*, 8(5), 260–266. doi:10.1080/20009666.2018.1528108
- Walker, D., Howe, C., Dunkerley, M., Deupree, J., & Cormier, C. (2019). The HLKES-2: Revision and evaluation of the health literacy knowledge and experiences survey. *Journal of Nursing Education*, 58(2), 86–92. doi:10.3928/01484834-20190122-05
- Wang, C., Lang, J., Xuan, L., Li, X., & Zhang, L. (2017). The effect of health literacy and self-management efficacy on the health-related quality of life of hypertensive patients in a western rural area of China: A cross-sectional study. *International Journal for Equity in Health*, 16(1), 1–11. doi:10.1186/s12939-017-0551-9
- Weiss, B. D., Mays, M. Z., Martz, W., Castro, K. M., DeWalt, D. A., Pignone, M. P., Mockbee, J., & Hale, F. A. (2005). Quick assessment of literacy in primary care: The newest vital sign. *Annals of Family Medicine*, 3(6), 514–522.  
doi:10.1370/afm.405
- Wheeler, M., & Bутtenheim, A.M. (2013). Parental vaccine concerns, information source, and choice of alternative immunization schedules. *Human Vaccines & Immunotherapeutics*, 9(8), 1782-1789. doi:10.4161/hv.25959

- Williams, M. V., Davis, T., Parker, R. M., & Weiss, B. D. (2002). The role of health literacy in patient-physician communication. *Family Medicine*, *34*(5), 383–389.  
<https://journals.stfm.org/familymedicine/>
- Wilson M. (2009). Readability and patient education materials used for low-income populations. *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice*, *23*(1), 33-40. doi:10.1097/01.NUR.0000343079.50214.31
- Wilson, L. M., White, K. M., & Hamilton, K. (2013). Predicting psychologists' intentions to integrate complementary and alternative therapies into their practice. *Australian Psychologist*, *48*(2), 149–158. doi:10.1111/j.1742-9544.2011.00058.x
- Wittenberg, E., Ferrell, B., Kanter, E., & Buller, H. (2018). Health Literacy: Exploring nursing challenges to providing support and understanding. *Clinical Journal of Oncology Nursing*, *22*(1), 53–61. doi:10.1188/18.CJON.53-61
- World Health Organization. (2011). *WHO-AIMS report on mental health in the Caribbean region*. Retrieved from  
[http://www.who.int/mental\\_health/evidence/mh\\_systems\\_caribbeans\\_en.pdf](http://www.who.int/mental_health/evidence/mh_systems_caribbeans_en.pdf)
- World Health Organization. (2016). *A mandate for health literacy*.  
<https://www.who.int/>
- World Health Organization. (2017). *Country cooperation strategy: Grenada*.  
<https://apps.who.int/>
- World Health Organization. (2019). *Health literacy and health behaviour*.  
<https://www.who.int/>

- Wu, J.-R., Moser, D. K., DeWalt, D. A., Rayens, M. K., & Dracup, K. (2016). Health literacy mediates the relationship between age and health outcomes in patients with heart failure. *Circulation-Heart Failure*, *9*(1), 1–8.  
doi:10.1161/CIRCHEARTFAILURE.115.002250
- Xie, B. (2011). Effects of an eHealth literacy intervention for older adults. *Journal of Medical Internet Research*, *13*(4), 22–39. doi:10.2196/jmir.1880
- Yilmazel, G., & Çetinkaya, F. (2017). Relation between health literacy levels, hypertension awareness and control among primary-secondary school teachers in Turkey. *AIMS Public Health*, *4*(4), 314–325.  
doi:10.3934/publichealth.2017.4.314
- Yukawa, K., Ishikawa, H., Yamazaki, Y., Tsutani, K., & Kiuchi, T. (2017). Patient health literacy and patient-physician communication regarding complementary and alternative medicine usage. *European Journal of Integrative Medicine*, *10*, 38–45.  
doi: 10.1016/j.eujim.2017.02.003
- Zakaria, N., Alfakhry, O., Matbuli, A., Alzahrani, A., Arab, N. S. S., Madani, A., Alshehri, N., & Albarrak, A. I. (2018). Development of Saudi e-health literacy scale for chronic diseases in Saudi Arabia: Using integrated health literacy dimensions. *International Journal for Quality in Health Care*, *30*(4), 321–328.  
doi:10.1093/intqhc/mzy033
- Zeltner, N.A., Welsink-Karssies, M.M., Landolt, M. A., Bosshard-Bullinger, D., Keller, F., Bosch, A., . . . Huemer, M. (2019). Reducing complexity: explaining inborn

errors of metabolism and their treatment to children and adolescents. *Orphanet Journal of Rare Diseases*, 14 (1), 1-9. doi:10.1186/s13023-019-1236-9

Zheng, M., Jin, H., Shi, N., Duan, C., Wang, D., Yu, X., & Li, X. (2018). The relationship between health literacy and quality of life: A systematic review and meta-analysis. *Health and Quality of Life Outcomes*, 16(1), 201–211. doi:10.1186/s12955-018-1031-7

## Appendix A: Health Literacy Knowledge and Experience Survey

### Health Literacy Knowledge and Experience Survey Version II

Thank you for participating in this survey. Your responses will be kept anonymous. You are encouraged to participate in this research study, however participation is optional.

You have the right to withdraw from the study at any time. If you choose to participate please answer all questions. Informed consent is implied with completion of the survey.

#### **Part 1: Health Literacy Knowledge**

**Directions: Questions 1-14 are multiple-choice questions. Choose the best answer and record only one response for each question.**

1. Low health literacy is most prevalent among which age group?
  - A. 15 to 30 years of age
  - B. 31 to 44 years of age
  - C. 45 to 60 years of age
  - D. 65 to 85 years of age
2. A patient with adequate health literacy will be able to:
  - A. Read basic healthcare information.
  - B. Follow verbal instructions but not written healthcare instructions.
  - C. Read, comprehend, and actively participate in decisions concerning healthcare.
  - D. Read healthcare information but have difficulty managing basic healthcare needs
3. What should the physician consider when conducting health teaching with a patient?
  - A. The last grade completed in school accurately reflects a patient's reading ability.

- B. Most patients read 3 to 5 grade levels lower than the last year of school completed.
  - C. Most patients with low literacy will ask questions if they do not understand information.
  - D. Literacy levels of high school graduates are adequate to manage healthcare needs.
4. What is the likelihood that a physician will encounter a patient with low health literacy?
- A. 1 in 3 patients.
  - B. 1 in 6 patients.
  - C. 1 in 9 patients.
  - D. 1 in 12 patients.
5. Which health behavior is common among patients with low health literacy?
- A. Lack of participation in preventative healthcare.
  - B. Disinterest in learning about healthcare problems.
  - C. Unwillingness to make lifestyle changes to improve health.
  - D. Frequently asking questions to clarify healthcare instructions.
6. Patients with low health literacy skills compared to those with adequate health literacy:
- A. Regularly participate in preventative healthcare.
  - B. Are less likely to utilize emergency room services.
  - C. Consistently see the same healthcare provider for medical treatment.
  - D. Are hospitalized more frequently for management of chronic illness.

7. What should the physician consider when developing a plan of care for a client with low health literacy?
- A. These patients often seek health care prematurely.
  - B. It is relatively easy to identify patients with low literacy.
  - C. Patients with low literacy may avoid asking questions.
  - D. Patients with low literacy will readily admit difficulty reading.
8. What is the priority action of the physician when conducting health teaching?
- A. Speak slowly
  - B. Draw pictures
  - C. Provide a handout
  - D. Use simple language
9. The recommended reading level for written healthcare information is at or below:
- A. 5th-6th grade.
  - B. 7th- 8th grade.
  - C. 9th-10th grade.
  - D. 11th-12th grade.
10. What is the best method to ensure that a health brochure is culturally and linguistically appropriate?
- A. Obtain feedback from the cultural group.
  - B. Conduct a systematic review of cultural practices.

- C. Obtain input from physicians that work with the cultural group.
  - D. Consult a translator to ensure accurate translation of information.
11. What is the best method for the physician to evaluate the effectiveness of healthcare teaching?
- A. Administer a pre-test and post-test with instructions.
  - B. Have the patient teach back the information to the physician.
  - C. Ask, "Do you understand the information I just gave you?"
  - D. Verbally ask the patient a series of questions following instructions.
12. When evaluating print materials for patients, what are important aspects to consider?
- A. Information should be presented in paragraph format.
  - B. Illustrations improve understanding of written information.
  - C. Italics should be used to emphasize key points in the text.
  - D. Include a glossary of medical terms used throughout the document.
13. Which title, for a health brochure on hypertension, reflects best practice for written health instructions?
- A. *How do I know that I have high blood pressure?*
  - B. How do I know that I have high blood pressure?
  - C. HOW DO I KNOW THAT I HAVE HIGH BLOOD PRESSURE?
  - D. **How do I know that I have high blood pressure?**



14. The physician is caring for a patient newly diagnosed with a health condition. What should be the priority focus during the first teaching session?

- A. A detailed explanation of the disease pathophysiology.
- B. All treatment options available to manage the health condition.
- C. Information related to the incidence and prevalence of the health condition.
- D. One main message and a specific action for management of the health condition.

**Part 2: Health Literacy Experiences**

**Directions: Questions 15-18 ask you to describe how often you participated in activities related to health literacy. Choose the response that best describes your health literacy experiences.**

15. How often do you evaluate the reading level of written healthcare materials before using them for patient teaching?

- A. Never
- B. Sometimes
- C. Frequently
- D. Always

16. How often do you evaluate the cultural appropriateness of healthcare materials?

- A. Never
- B. Sometimes
- C. Frequently
- D. Always

17. How often do you evaluate the use of illustrations in written healthcare materials before using them for patient teaching?

- A. Never
- B. Sometimes
- C. Frequently
- D. Always

18. How often do you use written materials to provide healthcare information to a patient or community group?

- A. Never
- B. Sometimes
- C. Frequently
- D. Always

### **Part 3: Demographic Data**

**Directions: Questions 19-24 relate to demographic data. Choose the response that characterizes you best.**

19. Please indicate which gender you identify with:

- A. Male
- B. Female

20. Please indicate your age in years: \_\_\_\_\_

21. Please indicate your ethnicity:

- A. Afro-Caribbean

- B. Caucasian
  - C. Asian
  - D. Black or African American
  - E. Other
  - F. Choose not to answer
22. Please indicate the number of years in medical practice: \_\_\_\_\_
23. How frequently was health literacy emphasized in your curriculum?
- A. Never
  - B. Sometimes
  - C. Frequently
  - D. Always
24. Please indicate the region where you received your medical training:
- A. North America
  - B. Asia
  - C. Africa
  - D. Caribbean
  - E. Europe
  - F. Other

## Appendix B: Permission to Use Health Literacy Knowledge and Experience Survey

From: Catherine Cormier <XXX@lsua.edu>  
Sent: Friday, October 5, 2018 10:39 AM  
To: Arlette Wildman <XXX@waldenu.edu>  
Subject: RE: Request to Use HI-KES

Arlette

During the past year I have been working with a group of nurse researchers to update the survey to reflect best practice. The revised instrument is attached with the answer key. You have my permission to use the survey.

Please consider sharing your results as we would like to collect additional information regarding reliability and validity of the survey.

Sincerely,  
DR. Cormier

## Appendix C: Health Literacy Strategies Behavioral Intention Questionnaire

### Health Literacy Strategies Behavioral Intention Questionnaire

Health literacy strategies are defined as the communication and teaching strategies that have been described as effective with low health literacy patients. These include, but are not limited to, plain language communication, which is the avoidance of medical jargon, and Teach-Back, which is a teaching strategy that has the patient teach back to the provider the information just presented to them.

**Directions: Please read each question and circle the answer that best reflects your opinion on the use of health literacy strategies in clinical practice. A rating of “4” would be neutral. Choose only one answer.**

1. My use of health literacy strategies with patients will result in patients having a better understanding of their illness and its treatment.

1	2	3	4	5	6	7
Likely				Unlikely		

2. Improved patient understanding will improve patient outcomes.

1	2	3	4	5	6	7
Agree				Disagree		

3. Use of health literacy strategies would help patients stay healthy.

1	2	3	4	5	6	7
Agree				Disagree		

4. Patients approve of the use of health literacy strategies by physicians.

1      2      3      4      5      6      7

Not at all

Very much

5. I would use health literacy strategies with patients.

1      2      3      4      5      6      7

Agree

Disagree

6. Most physicians use health literacy strategies with their patients.

1      2      3      4      5      6      7

Disagree

Agree

7. In regard to patient care, how much do you want to practice like other physicians?

1      2      3      4      5      6      7

Very much

Not at all

8. I expect that I will have time to use health literacy strategies with my patients.

1      2      3      4      5      6      7

Likely

Unlikely

9. Having time would enable me to use health literacy strategies with my patients.

1      2      3      4      5      6      7

Disagree

Agree

10. My use of health literacy strategies with patients would be a

1      2      3      4      5      6      7

Bad idea

Good idea

11. Most physicians would approve of the use of health literacy strategies with patients.

1      2      3      4      5      6      7

Agree

Disagree

12. I am confident that I can use health literacy strategies with patients in my practice.

1      2      3      4      5      6      7

Agree

Disagree

13. The use of health literacy strategies with patients is up to me.

1      2      3      4      5      6      7

Disagree

Agree

14. I intend to use health literacy strategies with patients in my practice.

1      2      3      4      5      6      7

Likely

Unlikely

**Thank you for participating in this survey. Your time is much appreciated**

## Appendix D: Permission to Use Health Literacy Strategies Behavioral Intention

## Questionnaire

From: Madeline Cafiero <XXX@sage.edu>  
Sent: Wednesday, June 26, 2019 7:49 AM  
To: Arlette Wildman <XXX@waldenu.edu>  
Subject: Re: Fw: Urgent: Permission to use the HLSBI

Hello Arlette,  
Attached is the HLSBI in Word format.  
I have attached the published Proquest Dissertation that will have the instructions for use in one of the Appendices.

You have my permission to change the wording from nurse practitioner to physician in the instrument, but please do not change any of the other sentences.

Good luck with your study!  
Madeline



## Appendix E: St. George's University IRB Approval

**From:** Kareem Coomansingh <[XXX@sgu.edu](mailto:XXX@sgu.edu)>

**Sent:** Monday, August 26, 2019 4:56 PM

**To:** Arlette Wildman <[XXX@sgu.edu](mailto:XXX@sgu.edu)>

**Subject:** RE: IRB 19027 Approval

Dear Arlette,

Subsequent to your application for approval for the use of human participants in your research project by the St. George's University Institutional Review Board (IRB), this is to advise that your revised application is hereby approved.

An annual summary report is due within 12 months' time from approval (**28th August 2020**). In the event that any change(s) is anticipated, as the Principal Investigator, you must notify the IRB to seek permission to make such change(s) before you can proceed.

Should you have any questions regarding this approval, please contact the IRB Administrator.

I have attached a scanned copy of your approval letter and also included a Research Interim Review/Completion form in this email. The original copy of your approval will be mailed to your department.

Regards

Kareem Coomansingh, MPH

SGU IRB Administrator

SGU Research Integrity Officer

Office of Research

St. George's University

Windward Islands Research & Education Foundation (WINDREF)

## Appendix F: National Institute of Health Certificate

**Certificate of Completion**

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Arlette Wildman** successfully completed the NIH Web-based training course “Protecting Human Research Participants”.

Date of completion: 06/10/2015

Certification Number: 1780217

