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Ontario's Registered Nurses Knowledge, Comfort, and Self-Efficacy Surrounding Patient Health
Literacy (HL) Assessments: An Observational Mixed Method, Cross-Sectional Study

By

Sheena A. Gagnier, RN

A Thesis

Submitted to the Faculty of Graduate Studies through the Faculty of Nursing in Partial
Fulfillment of the Requirements for the Degree of Master of Science in Nursing at the University
of Windsor

Windsor, Ontario, Canada

2021

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April 6, 2021

DECLARATION OF ORIGINALITY

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ABSTRACT

Health literacy (HL) is the ability to access and act on health-related information, as well as the ability to navigate through healthcare systems in order to maintain a healthy lifestyle. Health literacy assessments (HLA) are a direct measure of an individual's ability to understand health related information using valid and reliable health literacy assessment tools.

Objective: to explore the current state of HLA frequency use within the nursing profession in Ontario, as well as nurse's perception of knowledge, skills, self-efficacy, and environmental influences surrounding their HLA practices.

Methods: convergent mixed-method cross-sectional study utilizing an exploratory descriptive design.

Results: Seventy-one Registered Nurses (RNs) from across Ontario from a variety of backgrounds and work settings participated in the study. Nurses in this sample performed HLA some of the time, lacked knowledge about the Canadian populations risk factors for limited HL, and felt they had the proper skills, some of the time, to do HLA. Environment had a significant impact along with leadership support, on the frequency in which participants informally assessed patients HL. Nurses also reported a higher level of self-efficacy for their perceived ability to perform HLA, yet they only performed them some of the time. Universal precautions use was the greatest predictor ($p = 0.001$) to increase the frequency of HLA performances.

Conclusion: this is the first study of its kind in Canada, recommending that practicing nurses receive education and training in their work environments on HL and HLA. Adjustments should also be made to healthcare working environments in order to promote universal precaution use, leadership support, and develop policies and procedures to support nurses in HLA practice.

DEDICATION

This research is dedicated to all the patients I have had the pleasure of taking care of in my nursing career, as well as, to all the future patients and nursing professionals this research may positively impact.

ACKNOWLEDGEMENTS

It is with great honor to acknowledge the guidance of my Faculty Advisor Dr. Laurie Freeman for her encouragement to pursue higher learning, her invaluable time to answer my questions, and her unique ability to push me to my fullest. A sincere thank you to Dr. Debbie Rickeard for sharing her in depth knowledge, perspectives, and expertise on the topics of both health literacy and the profession of nursing. To Dr. Todd Loughead for his time and efforts in assisting me with the appropriate methods for analysis and the views of someone outside the profession of nursing, thus enhancing the clarity and understandability for those without medical background.

A special acknowledgment to my loving husband Joel, my sons Walter and Harland, and to all my family for their undivided love and support throughout my graduate journey.

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CHAPTER 1

INTRODUCTION

Nursing health assessments are situated at the beginning of all nursing care (Toney-Butler & Unison-Pace, 2019). They include a holistic approach to patient data collection processes that facilitate and include patient's needs, patient-centered care plans, care delivery, interventions, and appropriate education (Toney-Butler & Unison-Pace, 2019). Assessments are comprehensive and can identify potential or immediate life altering illness or disease, cultural barriers or access to care, safety concerns, barriers to learning, and concerns related to health and well-being (Toney-Butler & Unison-Pace, 2019). Nurses provide health related education in many different settings to individuals, groups, or communities, and within multiple healthcare systems. Delivery of health education is a vital nursing intervention, however, is often plagued with potential challenges (e.g., Health Literacy [HL]), that require time and patience (Denchy, 2001). Current literature has a paucity of information on whether or not HL assessments are taking place and/or are part of routine nursing practices across Canada. Thus, there is a notable disengagement that rests at the juncture between nursing assessments and patient-centered health education for Canadians. This chapter includes implications of HL on patient health outcomes, as well as the importance of assessing HL in nursing practice.

Health Literacy Defined

There are multiple definitions of HL in the current scientific literature. Given that this research is focused on the Canadian population and similar countries, below are two relevant definitions.

In Canada, The Center for Literacy (2011) defines HL as:

Health literacy allows the public and personnel working in all health-related contexts to

find, understand, evaluate, communicate, and use information. Health literacy is the use of a wide range of skills that improve the ability of people to act on information in order to live healthier lives. These skills include reading, writing, listening, speaking, numeracy, and critical analysis, as well as communication and interaction skills (p. 2).

In the United States, the U.S. Department of Health and Human Services (2010) states that:

Health literacy is a complex phenomenon that involves skills, knowledge, and the expectations that health professionals have of the public's interest in and understanding of health information and services. Health information and services are often unfamiliar, complicated, and technical, even for people with higher levels of education. People of all ages, races, incomes, and education levels—not just people with limited reading skills or people for whom English is a second language—are affected by limited health literacy (p. 4).

These definitions include an assortment of individual skills necessary to have an adequate level of HL, however, each has a slightly different focus. The Center for Literacy (2011) emphasizes processing the information and the actions taken to live a healthier lifestyle were as the U.S. Department of Health and Human Services (2010) highlights the fact that every individual could potentially have low HL and therefore should be assessed.

Background and Significance of the Problem

In nursing practice, pain medication would not be administered to a patient without assessing their pain first, the assessment is measured with an evidence-based verbal or visual instrument and guides pain interventions along with follow-up assessment and care (Wells et al., 2008). The rationale for performing assessments prior to interventions is to ensure that there is safe and clear communication between patients and providers (Wells et al., 2008). Nurse

assessments, interventions, and follow-up practices happen multiple times throughout daily nursing care. Therefore, why would one assume that patients can complete high level health forms, understand health education and medical terminology, or even read the resources given to them without knowing what level they understand health information?

Health Literacy Assessment

HL assessments are a direct measure of individual HL using appropriate questions, evidenced-based screening tools, and behavioral cues observed during the nursing assessment process (Altin et al., 2014; Cornett, 2009). The most commonly used valid and reliable instruments developed to assess HL take only three to five minutes to administer (Cutilli, 2005). Currently there is no information whether healthcare practitioners, including nurses, are routinely performing HL assessments in Canada, or if HL assessments are part of standard practice, suggesting a potentially large gap in the Canadian literature. The literature, however, recommends that nursing (Cutilli, 2005; Warring et al., 2018), public health practitioners (Mansfield et al., 2018), or primary care practitioners can and should perform HL assessments on patients in the general public, within acute care hospitals, public health sectors, and specialty practices (i.e., oncology, pediatric, surgery) (Eubanks et al., 2017; Holstein et al., 2014; Keim-Malpass et al., 2017; Mansfield et al., 2018; Warring et al., 2018; Yin et al., 2012).

Without use of a valid HL instrument, there is no way of knowing the HL levels of patients, therefore patient understanding of educational information provided is unknown and potentially harmful (Kazley et al., 2014; Macabasco-O'Connell, & Fry-Bowers, 2011; Thomason & Mayo, 2015; Wittenberg et al., 2018). There is a potential for patient harm at this disconnect between a lack of nursing HL assessment and education provided given that HL is considered a social determinant of individual health (Canadian Council on Learning, 2008; Liu et al., 2018).

Limited health literacy (LHL) influences the social and economic welfare of Canadians through decreased labor and productivity, increases vulnerability to poor health, and elevates costs within our health systems (Canadian Council on Learning, 2008). Increased costs are evident when individuals with LHL inappropriately use health services or have decreased or no access to care, reducing provider's opportunities to offer health promotion and/or disease prevention (Canadian Council on Learning, 2008).

LHL presents substantial health risks to individuals with chronic illnesses due to misunderstanding of health information, which negatively influences management of disease (Mackey et al., 2016). LHL is linked to decreased use and access of health care services and poorer individual health overall (Berkman et al., 2011; Paasche-Orlow & Wolf, 2007). For example, being readmitted to hospital, and in some cases cause of death, was directly associated with minimal or insufficient levels of HL in patients with heart failure residing in rural areas (Moser et al., 2015). Al Sayah et al. (2013) reported that individuals who were diagnosed with diabetes and had poor HL had steadily decreased knowledge about their disease. LHL has been negatively associated with readmission rates in emergency room departments (Ralakrishnan et al., 2017). Swartz et al. (2018) found that 25% of patients who experienced trauma and had LHL had poor interpretation of injuries, misunderstanding of care plans and discharge education, which led to extended healing times. In contrast, high HL levels, are linked with a decline in post-operative complications (Scarpato et al., 2016); and patients with renal disease had an increased likelihood of being placed on a transplantation list (Relative Risk (RR)=1.4-1.7), greater likelihood of receiving a kidney (RR=1.3-1.7), and significantly better surgical outcomes (Kazley et al., 2015).

Canadians, regardless of any moderating factors (e.g., age, income, Aboriginal status), were 2.5 times more likely to describe their health as “fair or poor” and often relied on financial assistance when they scored in the lowest level of HL (Canadian Council on Learning, 2008). In Canada, high HL was significant and directly associated with higher health outcomes in chronic illness, including a decrease in diabetes and hypertension prevalence (Canadian Council on Learning, 2008).

Given the effects of LHL on the health of Canadians, and in the United States of America (USA), we need to move towards evaluating what is being done to assess and address this important issue. In particular, nurses should be concerned with the issue of LHL because of : (a) our role in the initial nursing assessment and our duty to educate and evaluate patient learning, and (b) the fact that most people do not know that they have low or inadequate HL impacting their overall health and well-being (Cornett, 2009).

Health Literacy in Canadian Populations

In Canada, over half the population has less than adequate levels of HL (Canadian Public Health Association, 2008). The Canadian Public Health Association (2008) reported no difference in levels of HL by gender, with the exception of foreign-born citizens. Women who were foreign-born had even lower levels when compared to male foreign-born Canadians suggesting a gender association in that portion of the population (Canadian Public Health Association, 2008). Similarly, lower levels of HL were associated with immigrants who were not fluent in English or French, Canada’s two official languages (Canadian Public Health Association, 2008).

The “Transitions Between Hospital and Home” expert Panels Report on HL (Rootman & Gorden-El-Bihbety, 2009; Health Quality Ontario, 2016) highlights the seriousness and potential

hazardous risk associated with “incomplete or inaccurate transfer of information” (p.1), noting that it is completely avoidable with early HL assessment (Health Quality Ontario, 2016).

Purpose and Research Question

There is substantial existing evidence that suggests LHL affects many individuals, their health, self-care management abilities, and society (Canadian Public Health Association, 2008). Furthermore, there are Canadian provincial recommendations and supporting documents for health care providers to include HL concepts into their practice. Therefore, the purpose of this study is to (a) explore the current state of HL knowledge, assessment, and use within the nursing profession, (b) evaluate current nursing knowledge, training, and practices in Ontario as it relates to HL and HL assessment. Thus, the research questions are: (a) do Ontario registered nurses (RNs) possess the knowledge and skills to perform HL assessment? (b) are RNs in Ontario performing HL assessments, and (c) are there any relationships between RN’s working environment, nurse factors (e.g., self-efficacy), or associated nurse characteristic and the assessments of HL in patients.

CHAPTER 2

LITERATURE REVIEW

Objective

To examine the current state of the science on the profession of nursing and HL assessments in Canada or similar countries (i.e., United States).

Methods

The scientific literature search was planned during a meeting with the principal investigator (SG) and Faculty of Nursing, Library Scientist. Immediately following the meeting, a literature search was conducted and updated in August 2019. Databases searched included CINAHL, PubMed, Medline, and Cochrane Database of Systematic Reviews. Google Scholar was accessed after complete searches were done in the above databases to identify any grey literature or unidentified articles in previous searches.

The following inclusion criteria was applied to articles: published in English and included research on the nursing profession or nurses and any aspect of HL assessments. Articles were excluded if they were not published in the English language and did not include nurses and HL assessment. Search terms included alone and in combination were: "health literacy" AND "nursing staff" AND "assessments". The results of the search will be discussed followed by findings of major themes across all studies, and gaps in the literature.

Summary of Included Study Characteristics

A total of 198 articles were found in the electronic search, 168 were excluded at the title or abstract level, three were excluded due to duplicate publication, 27 were evaluated at the level of full text, and five more from Google Scholar were evaluated at the level of full text and

removed for duplication. After reviewing the 27 articles, three were further excluded and 24 were kept for in-depth review.

Out of the 24 articles the largest proportion ($n=11$) were observational studies, followed by mixed methods ($n=7$: $n=3$ observational; $n=2$ interventional; $n=2$ quality improvement projects), randomized trials ($n=2$), quantitative quality improvement projects ($n=2$), systematic review ($n=1$), and quantitative Delphi ($n=1$).

Studies that either evaluated the literature for appropriateness or tested the use of HL assessments for nurses included valid, reliable, and widely cited instruments ($n=17$) (e.g., Basic Health Literacy Screen (BHLS) [$n=5$] and Newest Vital Sign (NVS) [$n=4$]). However, a large portion of studies developed their own instruments ($n=10$) to evaluate professional knowledge, practices, understanding of interventions, and perceived important associated with HL and HL assessments (Bilotta, 2012; Gabreel & Beeler, 2018; Macabasco-O'Connell, & Fry-Bowers, 2011; Warring et al, 2018). Authors described how they developed their surveys based on review of the scientific literature, expert teams, and reported content validity (Baldochi et al., 2013; Bilotta, 2012; Macabasco-O'Connell & Fry-Bowers, 2011; Moore, 2017; Schlichting et al., 2007; Wittenberg et al., 2018).

Sample sizes throughout all studies that included nurses in the evaluation of HL assessments and practice ranged from $n=9$ to $n=273$. Study origin were United States ($n=23$) and Australia ($n=2$), no study evaluated Canadian nurses use of HL practices, knowledge, or use of HL assessments. No studies were found on the patient's perspectives related to HL concepts in nursing care received.

Three quality improvement projects (QIP) included the use of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores (Cartwright, 2017; Davis,

2017; Stikes et al., 2015) to evaluate how effective incorporating components of HL could enhance communication scores between nurses and patients. One QIP study implemented a HL assessment protocol to improve patient medication education, communication scores between nurses and patients, and the patient's medication HL (Cartwright, 2017). Two other QIP studies initiated standardized patient engagement policy for HL assessment by nurses specifically to improve patient satisfaction with communication and discharge planning, ultimately increasing HCAHPS scores (Davis, 2017; Stikes et al., 2015). The fourth QIP was initiated to educate all clinical employees about HL, transform the informed consent procedures and content to improve patient readership prior to signatures, as well as utilization of teach-back for nurses to promote patient comprehension (Lorenzen et al., 2008).

Major Findings

The Environment: HL and Assessment Training and Education, Opportunity, Policy, and Leadership

One major theme that emerged from the literature review was that the nursing work environment influenced the knowledge, awareness, and opportunity for HL assessments in nursing practice. Four sub-themes within the environment included education and training on HL and HL assessment, opportunities of HL assessment or care, policies and protocols, and leadership support. First to emerge from this review was that nurses require training and education on HL and HL assessment (described in >65% of the articles) in order to facilitate the foundation of knowledge and practice opportunities of HL assessments (Alqudah et al., 2014; Baldocchi, 2013; Dickens et al., 2013). Education and training support nurses overall buy-in, (Cartwright, 2017), encouraged practice changes (Lorenzen et al., 2008; Sand-Jecklin et al., 2017; Schlitchting et al., 2007; Stikes et al., 2015), facilitated the accuracy with instrument use

(Goggins et al., 2016), assisted nurses with recognizing potential biases and errors (Goggins et al., 2016), and increased fidelity when assessing HL (Cawthorn et al., 2014). Furthermore, it informed nurses how to care for or intervene when patients were affected by LHL throughout nursing care and prior to discharge (Cawthorn et al. 2014; McNaughton et al., 2015).

Another important aspect found was that education and training provided nurses with awareness of the impact of LHL (Dickens et al., 2013), the potential for patient misunderstanding during communication and health education (Goggins et al., 2016), and highlighted the importance of culturally appropriate care (Dickens et al., 2013; Moore, 2017). The literature suggests a current lack of formal training on HL and HL assessments for nurses (Baldocchi et al., 2013; Grabeel, & Beeler, 2018; Macabasco-O'Connell & Fry-Bowers, 2011; Schlitchting et al., 2007). Furthermore, it suggests that nurses used informal methods in their practice (up to 96% of the time) (Schlichting et al., 2007), did not use valid instruments, (Baldocchi et al., 2013; Macabasco-O'Connell & Fry-Bowers, 2011), and/or were not practicing any form of HL assessment throughout care or prior to beginning patient education (Lynn, 2017). Macabasco-O'Connell and Fry-Bowers (2011) found that nurses felt HL was not urgent compared to more time sensitive matters in patient care, thus affecting their opportunities to assess HL. They also found that the environmental workplace or systems were not supportive of HL concepts of care or HL assessments in practices (Macabasco-O'Connell & Fry-Bowers, 2011). However, nurses that received formal education and training were more likely (2.63 times) to use formal HL assessment methods with patients (Schlitchting et al, 2007). Grabeel and Beeler, (2018) reported that nurses wanted to learn more about HL and HL assessments through formal training and education. Moore (2017) found that nurse training also increased cultural care interventions in relation to concepts of HL. Even with the lack of HL assessments in

practice or formal training, many nurses felt that HL was an important part of nursing care (Lynn, 2017), that formal methods would benefit their practice, patient access, patient self-care/management abilities (Lynn, 2017; Macabasco-O'Connell & Fry-Bowers, 2011); and patients would profit more consistently from patient-centered and needs tailored education (Lynn, 2017).

HL policies for nursing care with patients aided nurses with validating their practice around HL assessments and interventions (Goeman et al., 2016). Barton et al. (2018) and Goeman et al. (2016) both recommend that nursing leadership teams evaluate current HL and HL assessment practices and promote practice changes to include these concepts. Leaders who participated in study protocols that implemented HL assessments reported gaining insight into the effect of LHL on the health of patients and had positive experiences during the transition process (Cawthorn et al., 2014; Goeman et al., 2016). Leadership teams who championed for inclusion of HL and HL assessment concepts within units were met with positive responses by nurses (Goeman et al., 2016). One study mentioned that the support of the leadership teams aided the sustained success of hospital wide HL assessments in nurse practice (Cawthorn et al., 2014).

Provider Nurse Factors: Knowledge, Awareness, Skill, Method, Self-efficacy, and Use of Universal Precautions

The second major theme to emerge was provider factors and provider sub-themes. These provider sub-themes were knowledge, awareness, skill, method of assessing, and use of health literacy concepts in their practice (e.g., use of teach-back method). Grabeel and Beeler (2018) found that most (88%) health professionals agreed that having knowledge and awareness was a critical component of HL and HL assessments in their practice. Professional reflection with newly implemented HL protocols reportedly promoted professional awareness of current

educational patient practices, as well as, how to assess for patient cues of comprehension (Goeman et al., 2016). Macabasco-O'Connell and Fry-Bowers (2011) found that nurses were aware of the effects of LHL as it related to their patient's assessment, however, nurse participants had not received appropriate training for formal assessments and or interventions. Similarly, the level of HL knowledge in nurses was quite varied, reportedly as low as 43.8% and as high as 70% (Lynn, 2017; Macabasco-O'Connell & Fry-Bowers, 2011; Toronto & Weatherford, 2016b). More (2017) found that HL and cultural care knowledge significantly improved following formal education and training. Bilotta (2012) reported that a formative model for educating nurses ($n=177$) on HL has been shown to increase their knowledge and comprehension, however, this method was not efficient for supporting practice changes in nursing care. Stikes et al. (2015) found that implementing HL learning programs for nurses increased their knowledge and practice, as identified through an increase in HL interventions in patient care.

Knowledge is reportedly associate with skill, both are gained under the domain of education and training, and attitude competencies in nursing (Toronto, 2016). Several studies report the importance of HL competencies for all RN's in their clinical practice (Barton et al., 2018; Moore, 2017; Toronto, 2016). Barton et al. (2018) included 24 knowledge based, 27 skills, and 11 attitude competencies for RN practice in their designed table developed specifically to engage health professionals on HL assessments and to support a culture that incorporates HL concepts. Those competencies are further supported by the results of Toronto (2016a) who performed a Delphi study on HL competencies for RN's using expert voting from across the United States. Their study also scored a list of core HL competencies on knowledge, skills, and attitudes for nurses (Toronto, 2016a). These combined results could assist leaders with the task

of changing clinical practice to include HL competencies for all bed-side RN's (Barton et al., 2018).

Skills such as communication, educating, and self-efficacy were identified throughout the HL literature. Wittenberg et al. (2018) found that many nurses were challenged in their communication practice when patients had LHL and only felt somewhat prepared to care for those patients. Nurses that had been working for a greater number of years were least comfortable with trying to identify patients with LHL (Wittenberg et al., 2018). Conversely, Baldocchi (2013) evaluated the relationship between HL, communication skills, and communication self-efficacy in nurses ($n=182$) and found that the greater number of years worked was positively associated with communication self-efficacy in the promotion of HL in practice. Level of education and number of hours has not been found to be associated with HL communication or self-efficacy skills, however, the level of self-efficacy was positively related to competence with HL in practice (Baldocchi, 2013). While Sand-Jecklin et al. (2017) found that there was no difference in the number of years a nurse ($n=115$) worked and their ability to assess HL. Future studies should evaluate the feasibility and comfort with HL communication to further understand how nurse characteristics are associated.

Patients reportedly welcomed HL assessments, indicating the appropriateness and helpfulness in relation to their care, as well as nurses use of teach-back for educating as it fostered a review of self-care management (Goeman et al., 2016). The Agency for Healthcare Research and Quality (2019) states that universal precautions are measures used in healthcare settings so that every provider knows it is common for individuals to struggle with health information and access to health-related services. Steps made to (a) simplify the information provided to patients with an emphasis on verifying understanding, (b) enhancing the environment

(i.e., unit, office, hospital) for easy navigation, and (c) encouraging (unspecified) individual efforts at improving health and well-being.

Using teach-back (for HL practice precautions) is suggested for all patients as one example of universal precautions wherein another includes assuming everyone has challenges with understanding health information (Agency for Healthcare Research and Quality, 2019). Use of Universal precautions falls under the highest ranked attitude competencies by HL experts for RNs to use in their practice (Toronto, 2016a; Wittenberg et al., 2018). Furthermore, nurses also felt using a teach-back method enhanced the education and evaluation of knowledge and fostered clarification of misunderstanding and documentation of understanding (Goeman et al., 2016; Lorenzen et al., 2008). One study reported that many (66%, $n=330$) of their sample of health professionals, which included nurse practitioners, often used the teach-back method in their day to day education (Schlichting et al., 2007). One qualitative study ($n=19$) reported that the teach-back method was a means of appraising the nurse's own education with patients following previous verbal and physical indicators that suggested misunderstanding (Toronto & Weatherford, 2016). Another study reported that nurses (22%, $n=70$) suggested using teach-back with patients who were identified as having LHL in order to support them with their care (Wittenberg et al., 2018). Including a protocol with HL concepts and education (i.e., teach-back) was preferred by nurses to support and rationalize their practices in relation to the HL interventions for patients with LHL (Goeman et al., 2016).

Two studies identified the skills associated with instrument accuracy when it came to administering a HL instrument. One study found that nurses over estimated scores on HL assessments of their white male patients (Goggins et al., 2016), while another study found that nurses and research assistants had very similar scores, suggesting accuracy in HL assessment

skills (Wallston et al., 2014). These were the only two studies to have measured nurse's ability to accurately perform HL assessments, and therefore this should be further evaluated.

Conclusion

The literature suggests that nurses should be assessing HL in most care settings with valid and reliable instruments (Alqudah et al., 2014; Dickens et al., 2013; Wallston et al., 2014). HL assessments are appropriate for nurses to perform, accepted by nurses and patient, are implementable into nursing workflow, and have been shown to be sustainable in practice (Cawthorn et al. 2014; Wallston et al., 2014; Warring et al., 2018). Nurse initiated HL assessments are time efficient (Alqudah et al., 2014) and do not require additional or increased time spent with patients (Lorenzen et al., 2008). Furthermore, nurses have been receptive to including HL assessments in their practice (Sand-Jecklin et al., 2017). There are additional benefits to nurse HL assessment besides patient centered education, such as, capturing large scale data on the HL of population (Cawthorn et al. 2014; Warring et al., 2018); patient satisfaction with nurse's communication and education (Cartwright, 2017; Davis, 2017; Stikes et al., 2015); and increase in the patients' ability to properly complete or manage their prescribed treatment plan (Cartwright, 2017).

In the United States only a few institutions have reported their transition with nurse led HL assessment (Cawthorn et al., 2014; Sand-Jecklin et al., (2017); Warring et al., 2018). Research strongly suggested that nurses should be afforded the time for HL education and training (Alqudah et al., 2014; Baldocchi, 2013; Dickens et al., 2013), leadership teams are responsible for facilitating and promoting HL change (Barton et al., 2018; Goeman et al., 2016), research exists to guide leadership teams on the education for HL knowledge and competencies (Barton et al., 2018; Bilotta, 2012; Toronto, 2016a), and changing clinical practice and policies

to foster HL assessments and HL care concepts can be met with positivity by nurses and patients (Cawthorn et al., 2014; Goeman et al., 2016). One reported barrier by nurses was not being supported in their work environments (Goeman et al., 2016; Macabasco-O'Connell & Fry-Bowers, 2011), which needs to be taken into account when attempting to promote clinical practice changes around HL and HL assessment for nurses.

The absence of any research on Canadian practicing nurses is unfortunate. There is no literature that discusses if nurses in Canada are provided with HL assessment education or training in their undergraduate or graduate education, clinical practice settings, or if nurses feel supported in their work environment through leadership or HL policy and protocols. Studies initiated HL assessments by nurses to measure outcomes such as satisfaction with nurse's communication or accuracy in ability to perform HL assessment, none evaluated the effectiveness of HL assessments by nurses or what nursing interventions are best suited for patients with LHL. Future research should investigate how to promote HL assessments and interventions with patients, as well as explore the gaps in Canadian nursing practice, knowledge, and education. This research will focus on the gaps in Canadian nursing practice, knowledge, and awareness; and the environment and perceptions of self-efficacy as they relate to HL and HL assessments.

CHAPTER 3

METHODOLOGY

Objective

To apply theoretical foundations, empirical frameworks, and current literature in support of the development of a health literacy nursing model.

Theoretical Underpinnings

Bandura's Social Cognitive Theory and Self-Efficacy Theory for Nursing Practice

Bandura's Social Cognitive and Self Efficacy Theories are well suited to help describe and explore how nurse's knowledge, training, skills, work environments, and characteristics can contribute to their use of HL assessments. Bandura's Social Cognitive Theory (1989) offers a platform for exploration into individual motivation, reflection, and behaviors, along with interrelated components of experiences within environments, individual factors, and performances (as cited in, Ziegler, 2005). Some of these concepts seen in the literature are associated with nursing professionals, HL and HL assessments, in particular, the environmental, individual, and performances. Furthermore, Bandura's Self-Efficacy Theory, extracted from Social Cognitive Theory, is one's own perception or belief in their competence and capabilities to accomplish specific tasks successfully (Bandura, 1977; Maddux & Stanley, 1986). There are three levels within this theory that are associated with a task, including degree of difficulty, generalizability or specificity, and perceptions of strengths verses weaknesses (Bandura, 1986). The psychological process of interactions described directly predicts individual aspiration, goals, energy and conduct, degree of behavioral performances, and social surrounding (Bandura, 1977; Maddux & Stanley, 1986). Bandura's major concepts of behavior, the environment, and individual factors all impact individual self-efficacy, which, contribute to success in

performance, and perceptions of self within a social context (Bandura, 1977; Maddux & Stanley, 1986). Therefore, *Social Cognitive Theory* and *Self-Efficacy Theory* were used to guide this study as they are reflective of the state of science surrounding nursing HL assessments in that the environment and personal factors are associated with performance or behaviors around HL assessments in practice.

Conceptual Frameworks

Causal Pathways between LHL and Health Outcomes

Bandura's Social Cognitive Theory (1989) and Self-Efficacy Theory (1977) afforded a foundation for the development of a nursing HL assessment model. While Paasche-Orlow and Wolf (2007) *The Causal Pathways between LHL and Health Outcomes* and Potratz's (2012) Circle Model of Nurse Empowerment and Engagement conceptual models offered depth and insight into potential provider (nurses) factors and interactions and environmental (healthcare settings) factor, respectively, for further development of a HL assessment model to base research and analysis.

Paasche-Orlow and Wolf's (2007) differential linear theoretical model, *The Causal Pathways between LHL and Health Outcomes*, suggests that HL is influenced by personal factors, and explores the interaction between limitation in HL, health system factors, interaction between people and their providers, and personal self-care capabilities. The pathways identify linkages associated with LHL that can lead to poor health outcomes (Paasche-Orlow & Wolf, 2007).

Provider factors related to LHL is one of the main focuses of this study. Provider and patient interactions encompass all the moments in time between patients and their nurses (Paasche-Orlow & Wolf, 2007). It involves health professional's *awareness* of their client's HL

and competence with the use of appropriate health education materials (Paasche-Orlow & Wolf, 2007). Factors mentioned in this model relating to HL are (a) *communication skills*, (b) *teachability*, (c) *time*, and (d) *patient-centered care* (Paasche-Orlow & Wolf, 2007).

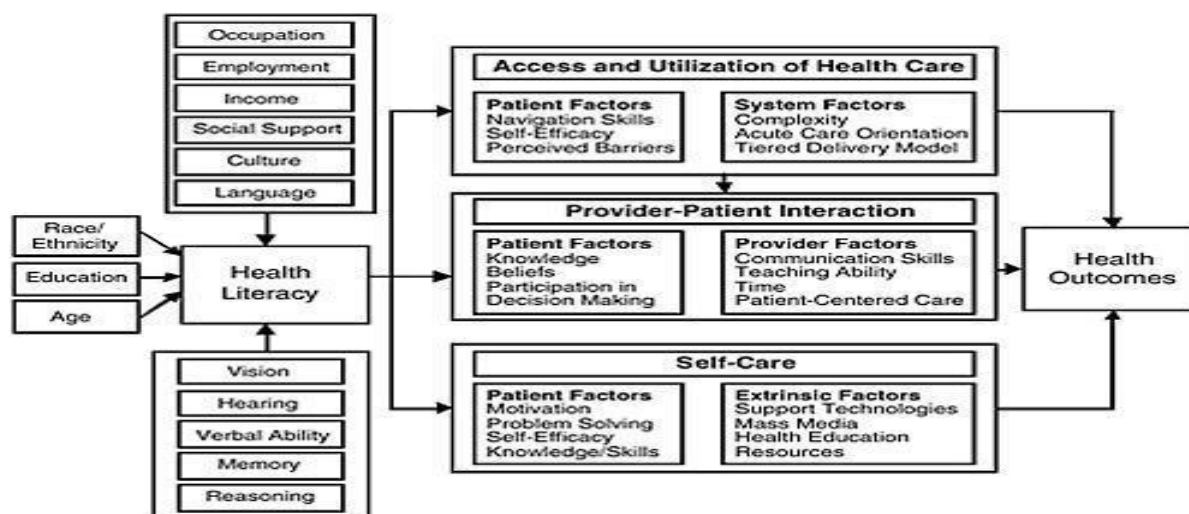


Figure #1. Causal pathways between limited health literacy and health outcomes.

SOURCE: Permission granted by PNG Publications to reprint figure. Paasche-Orlow, M. K., & Wolf, M. S. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior*, 31(Suppl 1), S19-S26. doi: 10.5555/ajhb.2007.31.supp.S19

Circle Model of Nurse Empowerment and Engagement

Potratz's (2012) Circle Model of Nurse Empowerment and Engagement is a complex framework that is both linear and circular and suggests that system structure, processes, and outcomes, effect encouragement, empowerment and engaging patients, leading to excellence in nursing care. A supportive structural workplace system encourages nurses to be empowered and engaged in their work (Potratz, 2012). When there is an alignment of factors associated with the *environment*, such as *leadership*, perceived workplace suitability, and *personal resources* nurses are more empowered (Potratz, 2012). This study will focus on the empowered environment

which includes structural empowerment (e.g., policies), opportunity (e.g., time), support (e.g., leadership), resources, and information (e.g., training) (Potratz, 2012).

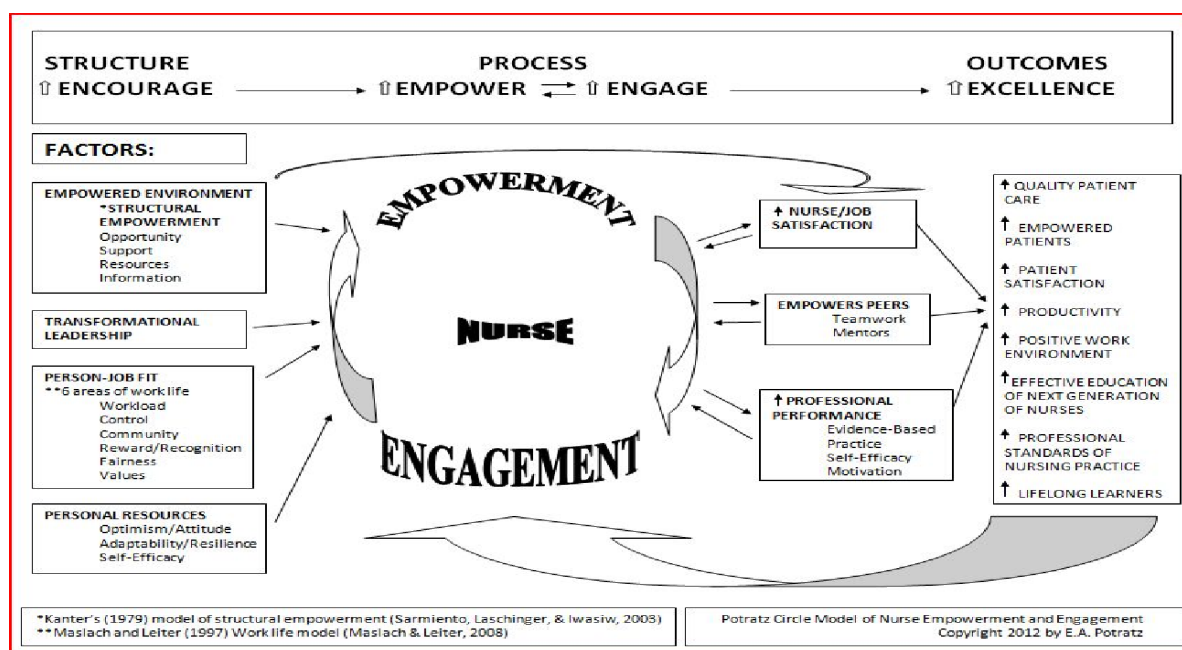


Figure #2. Potratz Circle Model of Nurse Empowerment and Engagement.

SOURCE: Permission granted by Elizabeth E. Potratz to reprint figure. Potratz, E. (2012).

Transforming Care at the Bedside: A Model to Promote Staff Nurse Empowerment and Engagement. Retrieved from Sophia, the St. Catherine University repository website:

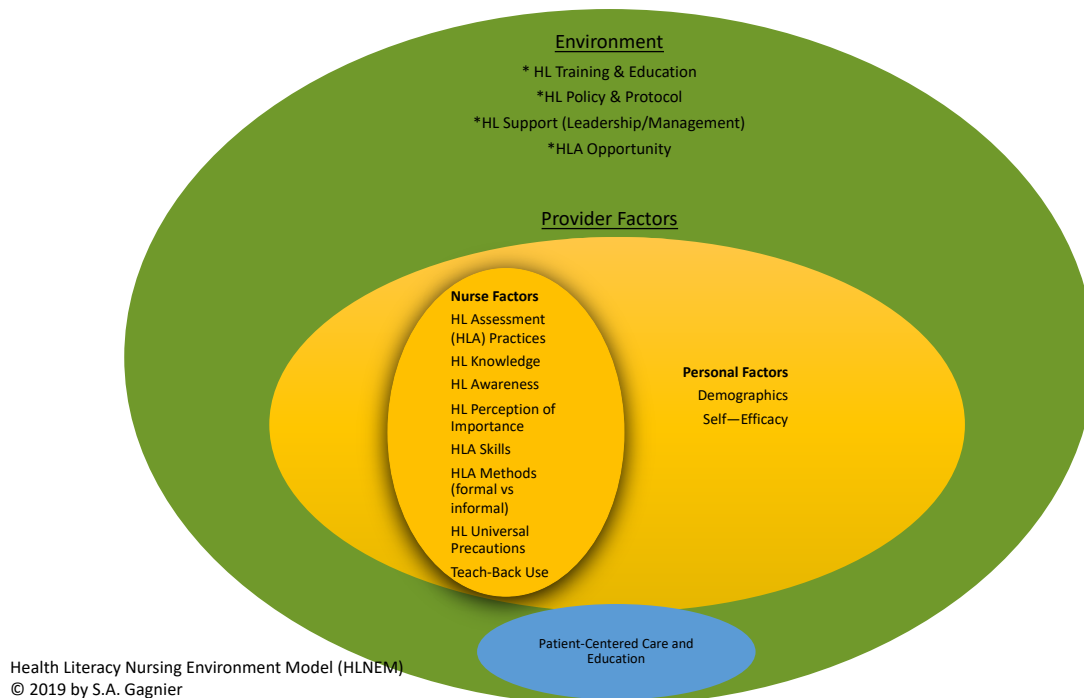
https://sophia.stkate.edu/ma_nursing/39

Health Literacy Nursing Environmental Model

The Health Literacy Nursing Environmental Model (HLNEM) was developed from the above scientific knowledge, theories, and conceptual frameworks of HL and HL assessments (see Figure 3). HLNEM suggest that a supportive work environment that includes concepts of HL and personal nursing factors will have an influence on patient-centered care. The two major concepts, environment and provider factors, have a direct impact on the level of patient care and education. The HLNEM guided an exploration of if work environments provide HL training and

education, have set policies and protocols for nursing around patient HL, if leadership and management teams support the concepts of HL in nursing's care and practice, and if the nurse believes that they have appropriate time and resources to perform patient HL assessments.

Personal factors in this model include demographics such as age, gender, ethnicity, years of experience, level of education, perception of self-efficacy, type of facility, and type of unit. These personal factors can impact the nurses HL knowledge, awareness, use of universal HL precautions, HL assessment skills; explore if nurses use teach-back to educate patients, and if patients are receiving education based on personalized HL needs. The two outer spheres are conceptualized to impact patient-centered care and education which is further hypothesized to impact patient outcomes. The patient sphere is beyond the scope of this study and will not be examined.



Research Design and Methods

The Health Literacy Nursing Environmental Model (HLNEM) provided a pathway to explore current nursing knowledge, training, and practices in Ontario as it relates to HL and HL assessments. A convergent mixed-methods, cross-sectional approach was chosen (Gordis, 2014). To more deeply explore potential issues around HL assessments, in practice, an exploratory-descriptive design was used for the qualitative facet of the study and included open-ended questions on nurse perceptions (Gray et al., 2017) with a convergence approach to analyzing the findings in order to compare and contrast the qualitative and quantitative results at the same time (Fetters et al., 2013).

Instruments and Measure

After extensive instrument evaluation and item cross-referencing with elements of the HLNEM two instruments were chosen. The *5-item Assessing Provider and Staff Knowledge of Health Literacy and Satisfaction with Health Literacy Assessment Tool for Patients in Primary Care Practice* (Lynn, 2017) and the *36-item Registered Nurses' Patient Teaching and Communication Survey* (Baldocchi, 2013) selected based on the coinciding questions of the instruments with the concepts of the HLNEM. Permission to use both instruments was granted by the researchers.

Lynn's (2017) instrument on provider knowledge and satisfaction consists of four questions measured on a 5-point Likert scale from "strongly agree" to "strongly disagree," with the fifth being an open text response asking to share their thoughts around HL or patient education (see Appendix A). Face validity has been established; however, the reliability of this instrument has not been reported in the literature. This instrument was used to assess the frequency of RN perception of HL knowledge, awareness, and perceptions of importance and

benefit, environmental HL policy, or current practice. The frequencies of individual perceptions on these items were also be used to evaluate their relationship to HLA practices.

The second instrument used was the 36-item *Registered Nurses' Patient Teaching and Communication Survey* (Baldocchi, 2013) (see Appendix B). Questions one and two measure demographics, questions three to 25 use a 5-point Likert response scale from “never” to “always”, and questions 26 to 36 use a visual analog scale from 0 (not at all confident) to 100 (highly confident). Baldocchi (2013) describes the instruments purpose to examine the “relationship between effective communication techniques RNs use to assess and promote health literacy and their communication self-efficacy (p.136). ” This instrument measures HL communication skills and self-efficacy of the nurse with four subscales; *preparation techniques*, *action techniques*, *personal communication self-efficacy*, and *workplace communication self-efficacy*. Baldocchi (2013) reported the use of a factor analysis to establish scale validity and intraclass correlation coefficients equal to or greater than .70 demonstrating reliability. No cumulative scoring method has been described for this instrument to date.

Upon review with two researchers, the instrument modifications made to the Baldocchi survey (2013), used for this study, were established to have face validity. Including measures of the HLNEM into the five sub-scales of the frequency of HLA practices, HLA skills, level of self-efficacy, universal precaution use, and confidence in the workplace environment associated with HLA support. It addressed the provider factors of HL skills (e.g., communication and confidence) and self-efficacy, HLA practices, HLA methods used, universal precautions of HL used (e.g., visual aids), and HL teaching methods, along with assessing use of teach-back methods. Therefore, the modified scale now specifically measured the five subscales of the HLNEM (see Appendix C). The five subscales were the frequency of HLA techniques use with

patients, level of self-efficacy associated with HLA, communication, and teaching; frequency of HLA skills (e.g., verbally review instructions with patients) used with patients, frequency of universal precautions (e.g., use of plain language) use, and confidence in supportive environmental factors (e.g., feeling confident in time to assess HL in the workplace) (see Table 1). These subscales were used to assess the relationship of the RN's skills, self-efficacy, universal precaution use, and environment to HLA performances. Nurse characteristics were also used to evaluate relationships to HLA frequencies.

Table 1

Sub-scale Measurements on the Modified Registered Nurses' Patient Teaching and Communication Survey

Sub-scale	<u>Questions</u>	<u>Example</u>
Health Literacy Assessment	3 to 7	"How often do you assess what the patient already knows about their health problem or situation?"
Skills	8 to 10, 21,22	"How often do you verbally review written instructions with the patient?"
Self-Efficacy	25 to 28, 31, 33	"I feel confident in my ability to assess the health literacy level of my patient"
Environment	29, 30, 32, 34 to 36	"I feel confident that I have sufficient time to teach patients during my work shift"
Universal Precautions	11 to 20	"How often do you use plain language, avoiding technical medical terms?"

Note: Modified from the Registered Nurses' Patient Teaching and Communication Survey (Baldocchi, 2013) sub-scale questions.

Items within the instrument that included similar constructs were grouped into the subscales and were measured by averaging total scores. All subscale scores were normally distributed. Cronbach Alphas were performed on all sub-scales of interest for measures of internal reliability and were as follows 0.79 for HLA, 0.85 for self-efficacy, 0.88 for skills, .81 for environment, and 0.85 for universal precautions. A four-factor generalized least square

confirmatory analysis with varimax rotation was performed and found that most items loaded on the factor subscales of interest, however, due to conceptual similarities there was overlapping (see Appendix D).

Two additional Canadian knowledge-based, one leadership question, and three open-ended questions were included in the study packet. The knowledge-based questions (see Appendix E) were derived from the Canadian Council of Learnings (2008) report on HL in Canada, and the leadership question asked about perceptions of leadership or management support in the workplace using a 5-point Likert scale from “never” to “always”. Additionally, baseline and demographic characteristics such as level of nursing education, age range, years working as an RN, employment status (e.g., full-time), type of institution, type of unit, and region of practice (e.g., town or county) were collected.

Ethical Consideration

Prior to data collection the University of Windsor’s Research Ethics Board cleared this study (REB# 36901), and participants gave informed consent (see Appendix F). Participants were also given the option to download and print the consent to keep for their personal records. Information regarding confidentiality and anonymity, data storage, researcher contact, how to withdraw, subsequent data use, and how to review the results of the study were also provided to participants.

Sample and Setting

Random sampling methods were used to recruit a portion of RN’s willing to receive research inquiries from the College of Nurses of Ontario (CNO). As of December 2019, the CNO reported 115,759 as the total population of registered nurses (RN) in general class and extended class working in Ontario (CNO, 2019). The CNO’s research department was contacted,

and they provided a list of names and addresses of RN's in Ontario willing to receive research inquiries. A postcard was sent to willing participants living in Ontario with a link to the survey package, as well as the research teams' contact information. A total of 41,222 RN's met inclusion criteria for this study. According to Altman (1991) the rule of thumb for required sample size in ordinal logistic regression is ten participants per independent variable, given nine independent predictor variables (described below), this study required 90 participants. With a sample size requirement of $n=90$ participants and a possible response rate of 25%, a total of 360 postcards were randomly sent to 41,222 of the total population of 115,759 RNs who were willing to receive research inquiries. Between May and July 2020 participants 18 years of age or older who were practicing nursing care with patients in Ontario were recruited to participate in the study. Due to low response rate (2.7%), through the random sampling and post-card recruitment strategy, snowball methods and emails to nursing organizations were later employed to increase the sample size.

Five 25-dollar Amazon® gift card draw incentives for participation and completion of the survey packet was offered to participants. The survey packet was developed in Qualtric® Survey Software and participants participated in the survey on any smart device or computer through a provided internet link. Participants were offered either a paper and pencil surveys or online access to the survey via the Qualtric® Survey Software.

Data Collection

Participant data and responses were collected through Qualtric® Survey Software and stored on a password protected secure server at the University of Windsor. All collected data were de-identified with only the PI and Faculty Supervisor having access. Data from all participants were screened for missing fields and cleaned. Multiple imputation methods for

missing data were used (Graham, 2009). All survey and demographic data were evaluated using SPSS®25.

Data Analysis

Descriptive Statistics

Measures of central tendency (e.g., mean, median, mode) were used to describe demographics and sample characteristics, including measures of variance for continuous variables such as range, standard deviation, and normality of the data were examined through visual inspection of histograms, and normality tests. Categorical variables were analyzed and reported as proportions and frequencies (Knapp, 2017). Knowledge based questions responses were analyzed by frequency and proportions of total correct scores.

Inferential Statistics

Inferential statistics were used for data analysis once data was cleaned and assessed for normalcy. Incomplete responses were not included in the analysis as it was inconclusive if the missingness was at random following the Little's Missing Completely at Random test (MCAR, $p = 0.6$). There were no skewness or kurtosis upon review (see Table 1.2) of the outcome variable HLA sub-scale visual inspection of the histogram prior to proceeding with statistical testing. Parametric and non-parametric testing was used, and assumptions of test were evaluated and met following the assessment of them (e.g., no multicollinearity between variables). Some variables required grouping in order to run statistical test (e.g., none and rarely) and there were consultations with an expert in statistics for clarification on the assumptions prior to analysis. ANOVA's, Mann-Whitney U, Kruskal-Wallis, and t-test were used to identify if individual items were associated with HLA practices. Only significant tests were reported below. Pearson's correlations were performed to assess the correlation of subscales skills, self-efficacy, workplace

environment, and universal precaution use as it related to HLA practices. Multiple linear regression was used to analyze variables (e.g., sub-scales and demographics) that had statistical significance in order to determine which were associated with HLA. The same methods above were used for subgroup analysis (e.g., environmental factors) for additional associated variables for the same dependent variable under provider factors (e.g., education and training) (Harrell, 2001). A stepwise elimination procedure was chosen as an exploratory approach to previously unknown associations with variables of interest by dropping variables with the largest non-significant p-value consecutively, was done to identify the set of variables with the strongest statistically significant association with HLA practices (Harrell, 2001). By performing multiple linear regression analysis with associated variables together, rather than running multiple univariable analysis, the risk of Type I errors was reduced (Sperandei, 2014).

Relationship Investigation

Descriptive statistics were used to report all nurse characteristics, proportions, and percentages of the total sample. ANOVA and Pearson correlation were performed on environment factors to determine which, if any, were significant with HLA's. Multiple linear regression was used following assessment of normality and meeting parametric testing assumption to evaluate if associated variables within the HLNEM of environmental factors, such as, training and education, institutional policy and protocols, leadership support, and opportunities were associated with HLA practices. Nurse characteristic categorical variables were used for analysis of associations with HLA practices. Characteristic variables of interests were type of unit, region of work, level of nursing degree, and type of institutions. Linear regression was used to analyze variables most associated with HLA practices.

Qualitative Analysis

An exploratory-descriptive method using content analysis was used for the qualitative portion of this study to explore nurse's perceptions associated with HL practices and their work environments (Gray et al., 2017). Responses were separated, analyzed, open coded, and grouped thematically to examine nurse's perception of why or why not HLA practices and education were included in their care or promoted in their institutions. Major themes were grouped together following constant comparison between participant responses and reported into word phrases. Handwritten memos were used on response printouts to assist in concept building (Glaser, 1978). The primary investigator coded, hand wrote memos, and had a secondary investigator review the response and emerged themes. The two investigators agreed on the final themes reported.

Exploratory descriptive falls under descriptive phenomenology (Streubert & Carpenter, 2011) and was applicable to the studies aims (Hunter et al., 2019). In exploratory descriptive qualitative (EDQ) a thematic approach to analyzing was most suitable as its intentions were to explore and describe the phenomenon while unearthing the underlying familiarities from all participants and delivering generalizations through emerging themes (Braun & Clarke, 2006, as cited in, Hunter et al., 2019). The final qualitative data was used to either validate or contrast the quantitative responses.

Hunter et al. (2019) describes the four main criteria of EDQ proposed by Whittemore et al. (2001) as follows: (a) credibility, as it pertains to the research's goals and overall purpose, (b) authenticity, refers to the participants opportunity to express their thoughts unreservedly and to be accurately understood, (c) criticality and (d) integrity, upholding integrity through researchers' reflective practice, bias awareness, validation, and appraisal by peers.

The aim of the qualitative aspect of this study was to explore the RN participants perceptions associated with HL practices and their work environments, utilizing EDQ methods

for analysis. The participants were given the option to respond to open-ended questions with unlimited space while responding. They were informed that none of their responses would be identified to them and thus allowing them to speak freely and anonymously. Reflective written practices were maintained throughout the study in order to recognize and dismiss potential biases on the response data. Qualtrics software was used to aid in the qualitative analysis to avoid misinterpretation of responses in word clouds as means to further validate emerging themes. Whittemore et al. (2001) and Milne and Oberle (2005) four criteria were applied to the EDQ process with the primary investigator coding and practicing reflective journaling while an independent reviewer (supervisor) ensured there was an accurate interpretation.

CHAPTER 4

RESULTS

Descriptive Analysis

A total of 360 RN's from across Ontario were randomly invited to participate in the study. Following a 2.7% ($n = 10$) response rate by the random sampling snowball sampling provided an additional $n = 71$ participant. Eighty-one invited RNs from across Ontario entered the study with 71 of those participants completing all required survey components, resulting in a completion rate of 87.7%. The baseline demographic and RN characteristics are found in Table 1.1. The majority identified themselves as female ($n=61$, 85.9%), followed by male ($n=6$, 8.5%), and cis-gendered ($n=4$, 5.6%) (see Table 1.1). The participants mostly self-identified as East Indian ($n=29$, 40.8%), followed by Caucasian ($n=24$, 33.8%) (see Table 1.1).

The majority of participants were young adults (18 to 35 years old; $n=45$, 63.4%), followed by middle aged (36 to 55 years old; $n=18$, 24.4%) and older adult (55 years old and up; $n=8$, 11.3%) (see Table 1.1). Level of education was reported mainly as bachelor's prepared ($n=44$, 62%) (see Table 1.1) with the mean number of years of nursing experience reported as almost 11 years ($M = 10.67$, $SD 10.218$) (see Table 1.2). The majority of respondents reported working in urban areas ($n=66$, 93.0%) (See table 1.1).

Working in a hospital accounted for 78.4% ($n=57$) of the participants workplace settings. Of the 22 types of units reported ($n=65$), acute care was represented in 73.2% ($n=52$) of the responses (See Table 1.1). The majority of nurses also reported working full-time ($n=33$, 46.5%) or part-time ($n=32$, 45.1%) (See Table 1.1).

Table 1.1

Registered Nurse Participant Sociodemographic Characteristic

Demographic characteristic	Full sample				<i>n</i>	<i>M</i>	<i>SD</i>
	<i>n</i>	%	<i>n</i>	%			
Gender identity			71	100			
Female	61	85.9					
Male	6	8.5					
CIS	4	5.6					
Ethnicity			70	98.6			
East Indian	29	40.8					
Caucasian	24	33.8					
Asian	7	9.9					
Other	10	14.3					
Age range			71	100			
Young adult (18 to 35)	45	63.4					
Middle aged (36 to 55)	18	25.4					
Older (55 and up)	8	11.3					
Level of education			70	98.6			
Bachelor's degree	44	62.0					
Master's degree	19	26.8					
Diploma certificate	4	5.6					
Doctoral degree	3	4.2					
Region			70	98.6			
Urban	66	93.0					
Suburban	4	5.6					
Facility type			71	100			
Hospital	57	78.4					
Long term care	5	7.0					
Private or clinic	3	4.2					
Other	6	8.5					
Unit			65	91.5			
Acute	52	73.2					
Post-acute	8	11.3					

Other	5	7.0					
Employment status			71	100			
Full-time	33	46.5					
Part-time	32	45.1					
Other							
Years of nursing experience			70	98.6	70	10.67	10.21
0-5	29	40.8					
6-10	18	25.3					
11-20	11	15.4					
20-30	5	7.0					
31 and greater	7	9.8					
Education			71	100	68	2.36	0.91
Diploma	4	5.6					
Bachelors	44	62.0					
Master/NP	19	26.8					
Doctoral	3	4.2					

Note: The full sample is shown under column *n* and %. *Mean* and *SD* shown for Years of nursing experience and Education.

Results by Research Question

1. Do Ontario RNs possess the knowledge and skills to perform HL assessment?

The majority of participants reported having a strong understanding of health literacy ($M = 3.87$, $SD \pm 0.79$) (Table 1.2). However, over half (60.6%, $n=43$) incorrectly identified the Canadian based knowledge question for reading level and none chose all the correct answers for the question (0%, $n=0$) pertaining to the Canadian population most impacted by LHL (see Table 1.2).

On the Registered Nurses' Patient Teaching and Communication Survey participants had an overall mean score of 3.53 ($SD = 0.73$) for the frequency of performing HLA techniques and 3.69 ($SD \pm 0.59$) for skills associated with HLA suggesting that the RNs in this sample perform HLA on occasion and at times feel they have the appropriate skills to perform them. The

average mean score for self-efficacy was 8.09 ($SD \pm 1.34$) of a possible 0-10, indicating that the participants perceived a high level of self-efficacy in their confidence HLA and HLA techniques and patient's education (see Table 1.2). Similarly, to the technique use and frequency of HLA's and perceived skills sub-scale scores, participants reported using universal precautions of HL on occasion in their workplace ($M = 3.75$, $SD \pm 0.59$) (see Table 1.2). When participants were asked if they used the method teach-back to assess patients learning ($M = 3.75$, $SD \pm 0.11$) they reported doing so every so often. The same was true for providing a repeat demonstration of health teaching ($M = 3.77$, $SD \pm 0.12$) (see Table 1.2). Lastly, patient-centered care was reportedly offered frequently ($M = 3.9$, $SD \pm 0.88$), by participants (see Table 1.2).

Table 1.2

Variable sample, means, and frequency

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Mean sub-scale scores					
HLA average scores	71	3.38	0.73	.152	-.171
Skills average scores	71	3.69	0.60	.022	.136
Self-efficacy average score	71	8.09	1.34	-.466	-.115
Universal Precautions on HL	71	3.75	0.59	.048	-.045
Mean scores					
Teach-back					
Repeat	71	3.75	0.11		
Demonstrate	71	3.77	0.12		
Patient-centered education	71	3.90	0.88		
Understanding of health literacy	71	3.87	0.79		
Knowledge based questions on health					
				<u>Correct</u>	<u>Incorrect</u>
				<i>n</i>	<i>%</i>
				<i>n</i>	<i>%</i>

literacy for Canadian populations					
	71	28	39.4	43	60.6
Canadian reading level	71	0	0	100	100
Health literacy on population					

Note. Modified Registered Nurses' Patient Teaching and Communication Survey (2013) 5-point Likert scale (1= never, 2=rarely, 3=sometimes, 4=often, 5=always) and 0 to 10 scale on self-efficacy. Skewness and Kurtosis shown for sub-scales. Correct and incorrect total scores showing *N* and % for Knowledge-based responses.

2. Are RNs in Ontario performing HL assessments?

To examine this research question a One-way ANOVA's and a t-test was conducted to explore the difference between scores on the Modified Registered Nurses' Patient Teaching and Communication Scale relative to the frequency of HLA techniques performed by using levels on the Likert scale for group comparisons with the formation of groups as never and rarely (0-2), sometimes (3), and often and always (4-5) for the one-way ANOVA. Groups who answered correctly verses incorrect on the knowledge-based questions were used for the T-test (Tabachnick & Fidell, 2019). As described above most RNs reported that they *sometimes* or *often* used HLA techniques with patients. However, a t-test showered there was no statistically significant difference between participants that correctly ($M = 17.17$, $SD \pm 3.82$) or incorrectly ($M = 16.76$, $SD \pm 3.65$) answered HLA knowledge questions and reported frequency of HLA techniques ($F(1, 69) = 0.207$, $p = 0.65$, $d = .11$). Similar results were present for perceived knowledge and awareness on HLA technique frequency scores (ANOVA, $F(4, 66) = 1.90$, $p = 0.121$). Conversely, the amount of formal education (diploma, bachelors, masters, and doctoral) and training that an RN received was significantly related to the amount of training on HLA that they participated in, with higher educated persons doing more voluntary training (ANOVA, $F(3, 64) = 6.65$, $p = 0.001$). Participants who reportedly had higher scores for training also had higher

mean scores for the frequency of using HLA techniques ($M = 21.1$, $SD \pm 3.01$) suggesting more training is associated with an increase in the frequency of HLA's. Interestingly, informal or formal training was not significantly related to perceived HLA self-efficacy sub-scale scores or HLA communication skills (ANOVA, $F(4, 66) = 1.95$, $p = 0.109$; ANOVA, $F(3, 67) = 0.841$, $p = 0.476$, respectively), indicating that the level of perceived HLA self-efficacy and HLA communication skills were not related to how much training participants reported receiving.

To investigate the relationship between the frequency of HLA technique use, and self-efficacy and the frequency of HLA technique use and skills on the modified Registered Nurses' Patient Teaching and Communication Survey, Pearson's Correlations were performed. This analysis revealed a statistically significant moderate correlation ($r = 0.646$, $p = 0.001$) between self-efficacy and HLA technique frequency (see Table 1.4), as well as a statistically significant moderate correlation ($r = 0.632$, $p = 0.001$) for skills and HLA technique frequency. Therefore, as the level of self-efficacy and perceived level of skills increased there was a moderate increase in reported frequency of HLA techniques (see Table 1.4).

3. Are there any relationships between RN's working environment or associated nurse characteristics and HL assessment practices?

Following one-way ANOVA's and T-test analysis nursing education, region, facility type, and unit were not meaningfully related to scores on the HLA technique frequency sub-scale, while gender and number of years working, approached statistical significance ($p = 0.07$). There was a statistically significant moderately positive ($r = 0.56$, $p = 0.000$) correlation (see Table 1.4) between a work environment sub-scale that supports HL practice and RN's HLA technique frequency scores identified through a Pearson's Correlation analysis, suggesting that

environments that promotes HL practices moderately increases a nurse's use of HLA's techniques.

Table 1.3
Correlations for Subscales and Individual Items within the Work Environment Subscale with HLA sub-scale scores

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Pearson Correlation Coefficient</i>
Items Within Environment Subscale				
1. Policy and Protocol	67	4.91	2.81	.33**
Resources	67	3.93	1.36	.37**
2. Leadership/management	67	3.54	2.64	.37**
3. Opportunity/time	67	2.37	0.95	.46**
4. Education				
5. Policy and Protocol	67	6.66	2.50	.47**
Documentation				
Sub-scales				
1. Universal precaution scale	67	37.19	5.80	.56**
2. Work environment scale	69	44.76	12.42	.56**
3. Skills scale	69	55.24	8.97	.63**
4. Self-efficacy scale	69	48.30	8.04	.64**

Note. The results for the entire sample are shown above.

** $p < .001$

To examine the research question a One-way ANOVA's were used to compare the mean scores of items on the Modified Registered Nurses' Patient Teaching and Communication Scale (Baldocchi, 2013) related to workplace environment to identify which items were mostly associated with an increase in the frequency of HLA technique sub-scale scores. Environmental supportive leadership or management items had a statistically significant impact on those who *strongly agreed* ($M = 19.55$, $SD \pm 6.12$) compared to those who *disagreed* ($M = 13.85$, $SD \pm 2.73$), with higher mean scores for those who *strongly agreed* (ANOVA, $F(5, 65) = 2.89$, $p =$

0.02). Suggesting that those who perceive to have more leadership or management support were more likely to report an increase in the frequency of performing HLA's techniques. Similarly, those who reported a higher level of confidence (8/10, $M=21.85$, $SD \pm 4.07$) on the item of appropriate time in the workplace to educate patients had higher mean frequency scores for HLA technique use than those who scored lower (2/10, $M = 10.50$, $SD \pm 3.35$) on the level of confidence with their time in the workplace with education (ANOVA, $F(9,61) = 3.73$, $p = .001$). Suggesting that participants who were confident that they had adequate time in their workplace to educate patients were more likely to actually use HLAs techniques. The item on policy and protocol and HLA documentation within the workplace environment showed similar results with higher mean scores on the HLA frequency use sub-scale (ANOVA, $F(10,60) = 2.34$, $p = .02$) for those who were *extremely confident* ($M = 25.0$, $SD \pm 0.0$) compared to *neither* ($M = 16.0$, $SD \pm 2.78$) and *no confidence* ($M = 14.6$, $SD \pm 2.08$). Meaning that if there were policies and protocols in the environment promoting HLA's then participants were more likely to perform HLA techniques on all patients. There were no statistically significant differences between the item of appropriate HLA resources in the workplace environment and the frequency of HLA technique use.

Two linear regression models were performed in order to examine the full sub-scale predictability in the first model followed by items within the sub-scale predictability in the second model, using backwards elimination as a guide for choosing variables and only including variables of significance ($p < 0.05$) in both regression models (Heinze et al., 2018). The initial multiple linear regression model assessed the variables of significance from previous analysis. The sub-scales self-efficacy, skills, and workplace environment were further explored for impact on the frequency of HLA techniques use sub-scale. There was an overall statistical significance

of $p < 0.0001$ and R^2 of 0.490, meaning that 49% of the variance in the frequency of HLA technique scores can be explained by level of self-efficacy, skill in performing HLA, and environmental support. The sub-scale most predictive of HLA performance was level of self-efficacy ($\beta = .153$, $t = 2.478$, $p = 0.016$, $sr^2 = .047$, CI 0.03-0.27, R^2 0.153) followed by HLA skills ($\beta = .115$, $t = .280$, $p = 0.04$, $sr^2 = .033$, CI 0.004-0.22, R^2 0.115) with environmental supports being insignificant ($p = 0.16$). Inferring that those with higher perceived self-efficacy to perform HLA and greater HLA skills were most likely to report an increase in performing HLA techniques in their practice. To further explore the relationship between these variables and their contribution to the variance on HLA performances each item was removed. The beta coefficient decreased from 0.490 to 0.470 when environment was removed, as well as 0.490 to 0.421 and 0.490 to 0.442 for skills and self-efficacy, respectively. Given that there was a greater reduction in significance and the frequency of HLA techniques variance when skills was removed from the model, skills accounted for the majority of the overall HLA variance.

A final multiple linear regression examined statistically significant items within the sub-scales to identify which were most associated with the frequency of HLA technique use sub-scale scores, including the variables universal precautions, leadership, time, education and training, and policy and protocol. There was an overall statistical significance of $p < 0.0001$ and R^2 of 0.433, meaning that 43.3% of the frequency of HLA technique use can be explained by the above predictor variables. However, in the regression model only universal precautions was statistically significant ($\beta = .255$, $t = 3.320$, $p = 0.002$, $sr^2 = .104$, CI 0.1 - 0.4, R^2 0.255). Suggesting that those who reported utilizing universal precaution within their practice were more likely to report an increase in the frequency of HLA technique use. Although environmental documentation was approaching statistical significances ($\beta = .331$, $t = 1.798$, $p = 0.007$, $sr^2 =$

.030, *CI* -.03 - 0.7, R^2 0.331) it was not meaningfully related to HLA technique frequency when compared to universal precautions items. To examine which variable contributed to the majority of the HLA technique use variance each item was removed from the model. Universal precautions reduced from 0.433 to 0.28, which was the greatest reduction, while time to educate patients had the lowest reduction (0.433 to 0.432).

Table 1.4

Two Model Regression Analysis: Model 1 Subscales and Model 2 Nurse Characteristics

Variable	Beta Estimate	SE	<u>95% CI</u>		P value
			<i>LL</i>	<i>UL</i>	
Model 1					
Self-efficacy	.153	.062	.030	.277	.016
Skills	.115	.056	.004	.227	.043
Environment	.051	.036	-.021	.123	.159
Model 2					
Universal precautions	.255	.077	.085	.390	.002
Leadership	.466	.345	-.351	.951	.183
Time	-.069	.190	-.503	.293	.718
Education	.735	.459	-.123	1.722	.114
Documentation	.331	.184	-.293	.443	.077
Resources	-.279	.221	-.138	.591	.213

Note. $N = 71$. Standard error (SE), 95% confidence interval (CI), lower limit (LL), and upper limit (UL).

Qualitative Results

Exploratory descriptive qualitative (EDQ) analysis was done for the qualitative portion of this study. The study included three open-ended question with no word limit. There were six

major themes that emerged across all written responses, with two from the first question, one from the second question, and three from the final question.

For the first open-ended questions participants were offered the option to “list factors in your workplace that you feel may contribute to how you are able to perform HLA.” There were many similarities in the written responses with two major themes emerging from this question, including *perceived lack of time* (opportunity) as a reason for not being able to perform HLA in their place of work. As well as *heaviness of workload* which included both the acuity of the patient and shortage of staff.

Table 1.5

Factors in RN workplaces that contribute to the performance of HLA

Emerging theme	Example quote	Frequency, <i>n</i> (%)
Perceived lack of time	<p>“There's way too many demands on the nurse's time, and this isn't a priority, even though it totally should be to avoid future readmits.”</p> <p>“Time constraints is the biggest barrier.”</p> <p>“Multiple patients, heavy workload, time constraints, lack of ability to follow up.”</p> <p>“Not enough time”</p> <p>“Lack of time, over scheduling, physician support - depending on the physician, some value these assessments and some do not”</p> <p>“Lack of time, difficulty getting a translator”</p>	30 (42.2%)
Heaviness of RN workload	<p>“Floor heaviness, staffing ratios.”</p> <p>“Shortage of staff.”</p> <p>“Patient health acuity; Low staff levels; Multiple Interruptions: e.g. alarms, phone calls, distractions, time to teach & asses is limited.”</p> <p>“high workload, increased patient turnover, inadequate staffing.”</p> <p>“Extreme workload, no support from management, no time.”</p>	21 (29.5)
<p><i>Note.</i> <i>n</i>=58 of the total sample (<i>n</i> = 71) responded. The percentage is out of the total sample (<i>n</i> = 71).</p>		

The second opened ended question asked participants “if you would like to share any additional comments about HL or patient education.” One major theme emerged from the responses. The *perceived lack of systemic support for providing health education to patients* in both nursing practice and individualized patient care.

Table 1.6

RN perception on health Literacy and patient education

Emerging theme	Example quote	Frequency, n (%)
Perceived lack of support for providing health education to patients	<p>A clear systemic approach located in a place of significance within the documentation of the patients record and a reasonable quick way to access the info for follow up/ re-education opportunities or community support and services would allow for further study and improvement in both the patients quality to improve & or ability of the health professionals to provide opportunities.</p> <p>Most health teaching is left to discharge planning; I have had to advocate and follow up on additional services and supports patients with hypertension and especially those with mental health disorders.</p> <p>Health teaching is of the utmost importance and unfortunately, I don't think clients always get the proper amount of time to educate them.</p> <p>Patients are eager to learn at the level they are. It is important to give information a patient is asking for and not overwhelm them with details they are not interested in</p> <p>It is important to person centered and take an individualized approach</p>	8 (11.2)
<p><i>Note.</i> n=8 of the total sample (n = 71) responded. The percentage is out of the total sample (n = 71).</p>		

Participants were then asked if they thought they would change their practice following participation in the study, and if they responded “yes” they were given the option to write through open text asking, “what changes do you think you will now make in your practice.” The similarities in the majority of responses resulted in three major themes (see Table 1.8.) *Improving the use of universal precautions* seemed to generate the majority of changes nurses felt they would take in their future practice, followed by *increased awareness* of health literacy

assessments and patient-centred education, and *initiation of health literacy assessments* to improve patient specific learning and/or education's needs.

Table 1.7

RN perception on health Literacy and practice changes following study participation

Emerging theme	Example quote	Frequency, <i>n</i> (%)
Improve the use of universal precautions	<p>“Asking patients what they know about their current condition; asking if they understand what has been provided to them through pamphlets, handouts, etc.; ask the patients to repeat back the instructions of how to do something I have taught them, or what they have learned about their condition; try to implement some sort of health literacy training in my workplace so that all of the staff are reminded of this to provide better health teaching and care.”</p> <p>“Asking the patient what they know about their health condition rather than assuming.”</p> <p>“I will implement teach back skills more thoroughly with printable resources in the language the patient prefers”</p>	13 (18.3)
Increased awareness	<p>“This has increased my awareness to be more mindful of assessing my patient's health literacy prior to educating.”</p> <p>“Great awareness and careful consideration for patient centered health teaching at their individual level.”</p>	12 (16.9)
Initiation of health literacy assessments	<p>“Consciously assess a patients literacy needs.”</p> <p>“Assessing health literacy prior to starting education with patients.”</p>	12 (16.9)
<p><i>Note. n=48 of the total sample (n = 71) responded. The percentage is out of the total sample (n = 71).</i></p>		

CHAPTER 5

DISCUSSION

This study was the first of its kind in Canada to explore if Ontario RN's perceive that they possess the knowledge and skills to perform HLA, if they were performing HLA and how often, and any potential relationships between HLA the RN's working environment, nurse factors (e.g., self-efficacy), or other associated personal factors.

RN's Knowledge, Skills, and Performance of HLA

The majority of this sample indicated they had a strong understanding of HL, although few or no participants correctly answering the knowledge-based questions pertaining to LHL and the Canadian population respectively. There were no significant differences in the participants perceived knowledge and/or perceived awareness and the frequency in which they performed HLA, suggesting that there was no relationship between perceived knowledge or awareness and the actual frequency of doing HLA's. Macabasco-O'Connell and Fry-Bowers (2011) found that 75% of their sample ($n = 76$) indicated knowing between a *moderate* or *great deal* about HL yet their sample incorrectly identified risk factors associated with LHL, as well reported many misconceptions on the individual impact of LHL. Interestingly, the perception of having the appropriate skills to perform HLA were found only some of the time in the current study. Of note Ontarian RN's perform HLA on occasion and use more HLA techniques if they possess higher levels of self-efficacy. Baldocchi (2013) reported a similar finding in that nurse's self-efficacy was significantly related to an increase in the use of HLA for evaluating patients.

Training and education, self-efficacy, and skills were found to be significantly related to an increase in HLA technique use, however formal education was not meaningfully related to self-efficacy or the frequency of HLA techniques. Similarly, Baldocchi (2013) found that formal

education was not related to the frequency of HLA's and instead using informal training methods was a means for nurses to gain skills with HLA and use with patients. Bilotta (2012) also reported that formal education improved knowledge but did not necessarily assist nurses to transfer HLA skills into their practice.

Although participants reportedly performed HLA some of the time, valid and reliable HLA instruments were not found to be part of routine practice protocols in Ontario, nor was HL generally asked about in health care systems or routinely documented in patients' charts. Remarkably, most of the nurses reported not having time or being too busy to perform HLA in their written responses although they answered doing them between *sometimes* and *often* in the quantitative questions. Thus, there seems to be a misunderstanding of what valid HLA involves and a potential measurement bias (self-classification error), as well as a conflict between a global understanding of HLA and what they are actually doing in their daily practice to measure it. A similar study in the US reported nurses were using HLA universal precautions (e.g., teach-back) techniques often, even though 80% ($n=76$) of their sample indicated not using a valid instrument while doing that assessment (Macabasco-O'Connell & Fry-Bowers, 2011).

Environmental Effects on HLA

An environment that promotes HLA practices significantly increases the frequency of a nurse's use of HLA's techniques with nurses who perceive that they have more leadership or management support consistently reporting using known HL techniques often. Participants who were also confident that they had adequate time in their workplace to educate patients were also more likely to indicate an increase in use of HLAs techniques. A *perceived lack of time* and *heaviness of workload* were consistently found to be major barriers and reduced their ability to perform HLA in their work environments. Furthermore, having policies and protocols and

information on universal precautions were found to significantly promote use of HLA techniques on patients. However, there were no statistically significant differences between having appropriate HLA resources available in the environment and actual frequency of HLA technique use. In parallel with the present study similar findings were found. Such as, in a nurse's work environment leadership and management can facilitate the promotion of HLA (Barton et al., 2018; Goeman et al., 2016), with nurses frequently utilizing HL and HLA practice policies to support their HLA practices (Cawthorn et al., 2014; Goeman et al., 2016). Unsupportive HL concepts and insufficient time in the workplace can be seen as barriers for nurses when it comes to performance of HLA (Goeman et al., 2016; Macabasco-O'Connell & Fry-Bowers, 2011; Schlichting, 2007).

Major findings from the qualitative responses seem to suggest that nurse do not feel supported in their environments when it comes to HLA and patient education. Nurses felt they did not have to time to assess patients and that the heaviness of their workload made HLA difficult to perform. As well, a *perceived lack of systemic support for providing health education* emerged. Thus, not only did these nurses feel overwhelmed and out of time, but they also felt that the system did not support them if and when they needed to provide proper education for their patients.

The most significant contributor to an increase in the frequency of HLA techniques that was supported by the regression model was use of universal precautions in this study. Qualitative responses further support the use of universal precautions in nursing practice with nurses in this study stating they would begin to incorporate them in the future. Research suggests that universal precautions are used to ensure HL is ranked as the highest attitude competency for nurses (Toronto, 2016a; Wittenberg et al., 2018) and needed to be included in practice methods

for every patient (Agency for Healthcare Research and Quality, 2019). Nurses in previous studies report that using universal precaution enhanced their HL practices by improving patient education and evaluation of knowledge, clarification of misunderstandings, and documentation (Goeman et al., 2016; Lorenzen et al., 2008). Furthermore, incorporating policies and protocols that include HL universal precautions was favored by nursing staff for practice and intervention rationalizations (Goeman et al., 2016).

Study Strengths and Limitations

The strengths of this study were that it encompassed nurses across Ontario who worked in a variety of health care settings and had multiple different nursing roles. Nurses with varying backgrounds and levels of education were also involved. This study is also unique and the first Canadian study to assess HLA practices by Ontario nurses. The use of a theoretical foundation and conceptual mapping to guide the methods and analysis strengthened the guiding structures of this study, as well, the use of mixed methods allowed for further extrapolation of the findings to make explicit conclusions.

The limitations of the study include sampling issues, small sample size, questions measuring knowledge and patient centered care, and measurement bias. The first random sampling methods only elicited a 2.7% response rate. Therefore, two additional sampling methods were necessary to get an adequate sample size. Unfortunately, this resulted in the majority ($n = 49.3\%$) of the participants residing in the Windsor Essex County region and limiting the generalizability of findings to all of Ontario.

The sample size goal of 90 was not met with 81 participants entering the study, and only a total of 71 completing the entire questionnaire, reducing the sample size for analysis. Subjects who withdrew from the study appeared to be at random, however they did not complete enough

of the sub-scales for analysis and had to be completely removed from the study. These limitations reduced the number of predictor variables available for analysis, as well as overall generalizability of the findings. Finally, a measurement bias was identified as nurses reported performing HLA between sometimes or often, however, in written responses many stated not having time and too heavy of a workload to perform them. Future studies would need to evaluate the understanding of valid HLA's.

Recommendations for Practice

The results of this study suggest a lack of understanding of what a valid HLA is, as well as lack of knowledge about HL levels in Canada. Therefore, education and training on HL, HLA, and interventions to improve patients understanding of health information are strongly recommended. Opportunities for nurses to attend training sessions is advised to aid in their level of self-efficacy and skills with HLA to support appropriate level of health education for all patients along with clarification on the misunderstanding that HLA increases care time spent with patients.

Lastly, enhancing the environment to include universal precautions awareness, providing policies and protocols to support HLA, adding in education for leaders to become more supportive of HLA, and developing or using standard HLA tools so that all patients are assessed prior to receiving health education while in care are also suggested. Hospitals and leadership teams are advised to begin to review valid and reliable HLA tools and identify one to use that fits best with their patient population needs as well as their staffs' capabilities.

Recommendations for Nursing Research

It is suggested that future studies seek larger diversified sample sizes to continue to investigate the use of or frequency of HLA in practice and potential contributing factors of

Canadian nurses to HL of the population. More knowledge-based questions to explore the gaps in Canadian nursing practice, knowledge, and education would assist universities and colleges to better prepare nurses for HLA and patient-centered education while building on their skills and self-efficacy. Evaluation of nurse led HLA should be explored with valid and reliable tests to see if they are effective for improving patient's knowledge around health issues and to refine health education practice changes for RN's. An assessment of nurse's perceptions and thoughts of what HLA should be could also be included in these studies. Furthermore, larger scale studies done within hospitals, inclusive of leadership and management, nursing staff, and patients could assist with the development of institutional wide support systems for providing patient centered health education.

Conclusion

In conclusion nurses in Ontario perform HLA some of the time and perceive themselves to have adequate levels of knowledge, awareness, self-efficacy and skills to do so. Unfortunately, most participants in this study could not correctly identify what increased Canadians' risk for LHL and many did not actually perform HLA due to *perceived lack of time* and *heaviness of workload*. Although the literature on HLA and the nursing profession suggests that HLA are easily integrated into a nurse's workflow (Cawthorn et al. 2014) and are time efficient (Alqudah et al., 2014; Lorenzen et al., 2008), this study found that nurses felt that time and workload impacted their ability to consistently perform HLA on patients. Regardless, it would appear that knowledge of LHL and perceptions of appropriate time to properly educate patients had no significant impact on the actual performance of HLA in this sample. Rather, self-efficacy and perceived skills to perform HLAs were significantly related to frequency of HLA techniques being performed. Suggested areas for leadership teams to assist nurses to focus for future HL

training, as well as, clarifying the misconception that HLA and proper education for patients take much more time is needed.

Nurses require continued HLA training and education with ongoing informal prompts, proper policies and protocols in the work environment, leadership teams that promote the use of HLA, and ways to build skills and increase individual self-efficacy as these variables were shown to significantly increased the use of HLA techniques in this study. Finally, leadership and management teams should focus on universal precautions competencies for check offs and promote these practices in all healthcare settings for nurses as universal precautions was the most significant contributor to an increase in HLA techniques used in this study.

This study adds new knowledge on Ontarian practicing RN's, the frequency in which they perform HLA, and potential contributing factors. Future research should continue to explore the field of HL research in order to build on the emerging body of knowledge for the nursing profession.

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APPENDIX A

ASSESSING PROVIDER AND STAFF KNOWLEDGE OF HEALTH LITERACY AND SATISFACTION WITH A HEALTH LITERACY ASSESSMENT TOOL FOR PATIENTS IN A PRIMARY CARE PRACTICE (Lynn, 2017)

Assessing Provider and Staff Knowledge of Health Literacy and Satisfaction with a Health Literacy Assessment Tool for Patients in a Primary Care Practice

Provider/Staff Survey #1

Please circle your chosen answer to each question below.

1. Do you feel you have a strong understanding on what health literacy is?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

2. Do you feel that the health literacy of patients is assessed at your clinic?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

3. Do you think that assessing health literacy of patients is an important part of patient education teaching?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree

4. Do you think that patients could benefit from tailored education based on individualized assessment of health literacy levels?

1. Strongly Agree
2. Agree
3. Neutral

4. Disagree
5. Strongly Disagree

5. If you would like to share any additional comments about health literacy or patient education, please comment below:

APPENDIX B

REGISTERED NURSES' PATIENT TEACHING AND COMMUNICATION SURVEY (Baldocchi, 2013)

225

Your completion of this survey demonstrates your consent to participate in this research project

Registered Nurses' Patient Teaching and Communication Survey

Please respond to the following items to the best of your ability by choosing a single response for each.

1. I am a Registered Nurse (RN) providing direct care to patients.

- ☐ Yes
☐ No

If you are not an RN who provides direct care to patients, please do not continue completing this survey.

2. How much formal instruction specific to working with patients with decreased and/or limited health literacy have you received?

- ☐ None
☐ A small amount
☐ A moderate amount
☐ Quite a bit
☐ A great deal

Below are some techniques that RNs may use to help patients understand health information. Please indicate how often **within the last two weeks** you have used each technique.

How often do you:	Never	Rarely	Sometimes	Often	Always
3. Assess what the patient already knows about his/her health problem or situation?					
4. Ask the patient how he/she has managed the health problem or situation prior to seeking treatment ?					
5. Ask the patient if he/she has difficulty reading or understanding medical information?					
6. Ask the patient if he/she has difficulty completing medical forms?					
7. Use your instinct or "gut feeling" to assess the patient's health literacy needs?					
8. Ask the patient to repeat instructions back to you to check for understanding?					

How often do you:	Never	Rarely	Sometimes	Often	Always
9. Ask the patient to give a return demonstration of a skill you have instructed?					
10. Ask the patient whether he/she would like a family member/friend to be included in patient teaching/planning sessions?					
11. Use plain language, avoiding technical medical terms?					
12. Limit information to no more than 3 key points at a time?					
13. Hand out printed educational materials to the patient?					
14. Underline key points in patient information handouts?					
15. Write out instructions?					
16. Read instructions out loud to patients ?					
17. Speak more slowly than usual during patient education sessions?					
18. Use visual aids such as pictures, models, or videos during patient education sessions?					
19. Verbally review written instructions with the patient?					
20. Ask the patient if he/she has any questions about the instructions?					
21. Refer patients to other services available for literacy/health literacy problems (such as adult basic education, GED etc.)?					
22. Follow up with the patient in subsequent shifts or visits to confirm understanding?					
23. Ask the patient how he/she will follow the instructions at home?					

For the next questions, indicate the degree to which you agree with the following statements:

	Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
24. I use informal learning strategies (e.g., continuing education classes; reading journal articles; “on the job” experience) to learn effective communication techniques.						
25. I use formal learning strategies (e.g., my initial nursing education program; graduate nursing program) to learn effective communication techniques.						

Using the 0-100 response scales below, rate your confidence in your ability to do the following by circling the appropriate number.

26. I feel confident in my ability to assess the health literacy level of my patients.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

27. I feel confident that I can identify patients with health literacy concerns.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

28. I feel confident in my ability to communicate health information at the patients’ level of understanding.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

29. I feel confident that I can communicate effectively to patients.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident					Moderately confident					Highly confident

30. I feel confident that I have the necessary resources to provide patient teaching.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident					Moderately confident					Highly confident

31. I feel confident that, compared to my other nursing responsibilities, I give patient teaching high priority.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident					Moderately confident					Highly confident

32. I feel confident in my ability to teach patients.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident					Moderately confident					Highly confident

33. I feel confident that I have sufficient time to teach patients during my work shift.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident					Moderately confident					Highly onfident

34. I feel confident in my ability to evaluate the patients' understanding of the health information I have given them.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

35. I feel confident that I can individualize my patient teaching documentation with my current workplace documentation tool.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

36. I feel confident that my workplace's documentation system addresses health literacy issues.

0	10	20	30	40	50	60	70	80	90	100
Not at all confident				Moderately confident				Highly confident		

APPENDIX C
STUDY QUESTIONNAIRE

Q1 What gender do you most identify with?

- ☐ CIS Gender or (1)
 - ☐ Identifies as Male (2)
 - ☐ Identifies as Female (3)
 - ☐ Transgender (4)
 - ☐ Non-Binary (5)
 - ☐ Two Spirited (7)
 - ☐ A gender not listed above (please specify): (8)
-

Q2 What ethnicity do you most associate with?

- ☐ Caucasian
 - ☐ European
 - ☐ African American
 - ☐ East Indian
 - ☐ Native American
 - ☐ Asian
 - ☐ Other _____
-

Q3 What is your age range?

- ☐ 21 to 25
 - ☐ 26 to 35
 - ☐ 36 to 45
 - ☐ 46 to 55
 - ☐ 56 to 65
 - ☐ >65
-

Q4 What is your highest obtained level of nursing education?

- ☐ Diploma
 - ☐ Bachelor's Degree (e.g. BScN)
 - ☐ Master's Degree (e.g. MScN/MSN)
 - ☐ Advanced Nursing Practice (e.g. NP)
 - ☐ Doctoral Degree (e.g. PhD)
-

Q5 How many years of registered nursing experience do you have?

- ☐ In years (e.g., 5) _____
-

Q6 What city or town in Ontario do you work as an RN?

Q7 What type of facility or institution do you work as an RN in?

☐ Hospital

☐ Walk in Clinic

☐ Long-Term Care

☐ Home Care

☐ Private Office

☐ Community/Public Health

☐ Other- please specify below _____

Q8 What type of unit do you work in as an RN?

- ☐ Adult Medical Surgical/Telemetry
- ☐ Adult Surgical
- ☐ Adult Dialysis
- ☐ Adult Psychiatric
- ☐ Adult Intensive Care
- ☐ Pediatric Medical Surgical
- ☐ Obstetrics/Newborn
- ☐ Pediatric Intensive Care
- ☐ Neonatal Intensive Care
- ☐ Adult Oncology
- ☐ Pediatric Oncology
- ☐ Emergency
- ☐ Not Applicable
- ☐ Other _____

Q9 What is your RN employment status?

- ☐ Full-Time
- ☐ Part-Time
- ☐ Contingent
- ☐ Other (please specify) _____

Q10 The next two questions are on the health literacy levels of Canadians.

Q11

To the best of your knowledge, what is the average reading level of Canadians

- ☐ Grade 8
 - ☐ Grade 5
 - ☐ Grade 12
 - ☐ College level
 - ☐ None of the above
-

Q12 To the best of your knowledge, please select the correct answer regarding Canadians and Health Literacy (select all that apply).

- ☐ 55% of Canadians aged 16 to 65 scored below adequate on a health literacy
- ☐ health literacy scores often decline with age
- ☐ there is no significant difference between the average health literacy levels of men and women ages of 16 and 65
- ☐ 24 to 32% of foreign-born men and women have extreme difficulty with and only limited use of printed materials

Q13 The following questions explore your thoughts and understanding of what health literacy is

	strongly disagree	disagree	neither disagree or agree	agree	strongly agree
I have a strong understanding on what health literacy is? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The health literacy of patients is assessed at my place of work? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing health literacy of patients is an important part of patient education/teaching? (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patients could benefit from tailored education based on individualized assessment of health literacy levels? (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q14 The following questions assess your current ability to perform health literacy assessments.
*Realizing that individual work environments may impact your ability to routinely perform tasks associated with health literacy practices.

Q15 How much formal instruction (e.g., undergraduate or graduate level education) specific to working with patients with decreased and/or limited health literacy have you received?

- ☐ None
- ☐ A Small Amount
- ☐ A Moderate Amount
- ☐ Quite A Bit
- ☐ A Great Deal

Q16 How often do you

	never	rarely	sometimes	often	always
Assess what the patient already knows about their health problem or situation?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask the patient how he/she has managed the health problem or situation prior to seeking treatment ?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask the patient if he/she has difficulty reading or understanding medical information?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask the patient if he/she has difficulty completing medical forms?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use your instinct or “gut feeling” to assess the patient’s health literacy needs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask the patient to repeat instructions back to you to check for understanding?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask the patient to give a return demonstration of a skill you have instructed?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ask the patient whether he/she would like a family member/friend to be included in patient teaching/planning sessions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use plain language, avoiding technical medical terms?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limit information to no more than 3 key points at a time?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand out printed educational materials to the patient?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Underline/highlight key points in patient information handouts?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Write out instructions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Read instructions out loud to patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speak more slowly than usual during patient education sessions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use visual aids such as pictures, models, or videos during patient education sessions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Verbally review written instructions with the patient?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ask the patient if he/she has any questions about the instructions?

☐☐☐☐☐

Follow up with the patient in subsequent shifts or visits to confirm understanding of previous health education presented ?

☐☐☐☐☐

Ask the patient if they can follow the instructions provided at home?

☐☐☐☐☐

Q17 Please list factors in your place of work that you feel may contribute to how often you are able to perform health literacy assessments.

Q18 I use informal learning strategies (e.g., continuing education classes; reading journal articles; “on the job” experience) to learn effective communication techniques.

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Mildly Disagree
- ☐ Mildly Agree
- ☐ Agree
- ☐ Strongly Agree

Q19 I use formal learning strategies (e.g., my initial nursing education program; graduate nursing program) to learn effective communication techniques.

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Mildly Disagree
- ☐ Mildly Agree
- ☐ Agree
- ☐ Strongly agree

Q20 The following questions ask you to rate your confidence associated with health literacy practices, skills, and environmental resources and support.

Q21 Using the 0-10 response scales below, rate your confidence. 0= lowest, 10=highest

	0	1	2	3	4	5	6	7	8	9	10
My ability to assess the health literacy level of my patients. (1)	C	C	C	C	C	C	C	C	C	C	O
My ability to identify patients with health literacy concerns. (5)	C	C	C	C	C	C	C	C	C	C	O
My ability to communicate health information at the patients' level of understanding. (6)	C	C	C	C	C	C	C	C	C	C	O
My ability to communicate effectively to patients. (7)	C	C	C	C	C	C	C	C	C	C	O
That I have the necessary resources to provide patient teaching. (8)	C	C	C	C	C	C	C	C	C	C	O
Compared to my other nursing responsibilities, I give patient teaching high priority. (9)	C	C	C	C	C	C	C	C	C	C	O
My ability to teach patients. (10)	C	C	C	C	C	C	C	C	C	C	O
That I have sufficient time to teach patients during my work shift. (11)	C	C	C	C	C	C	C	C	C	C	O

My ability to evaluate the patients' understanding of the health information I have given them. (12)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

That I can individualize my patient teaching documentation with my current workplace documentation tool. (13)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

That my workplace's documentation system addresses health literacy issues. (14)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Q22 My management and/or leadership team(s) support/promote the concepts of health literacy on the unit (e.g., visual aids for patient learning and/or educating staff on health literacy)

- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Mildly Disagree
- ☐ Mildly Agree
- ☐ Agree
- ☐ Strongly Agree

Q23
Optional:

If you would like to share any additional comments about health literacy or patient education, please comment below:

☐ Click to answer _____

Q24 Do you feel that, after taking this survey, you are more interested in learning about health literacy?

☐ Yes

☐ No

Q25 Do you think that doing this survey will change your practice?

☐ Yes

☐ No

Q26 Given that you answered yes to the last question, what changes do you think you will now make in your practice?

Q27 Do you wish to submit your answers?

☐ Yes

☐ No

Q28 Please select YES to be entered into the draw (Amazon \$25 Gift Card) and to submit your answers.

Please select NO to submit your answers and exit the survey.

If you wish to be re-directed to the resource page on the website Health Literacy for Nursing Practice choose "Resources on health literacy." This option is also available after entering into the draw.

☐ Yes

☐ No

☐ Resources on health literacy

APPENDIX F

FACTOR ANALYSIS

Confirmatory Factor Analysis for Modified Sub-scales

Modified sub-scale questions	Factor Loading			
	1	2	3	4
HLA sub-scale questions 3 to 7	.486 .327 .465 .376	.221 .439 .305 .301	.433 .281 .140 .372	.166 .122 .304 .110
Skills sub-scale questions 8 to 10, 21,22	.384 .211 .169 .769 .449	.276 .273 .551 .127 .406	.522 .453 .099 .366 .166	-.002 -.009 .146 .022 .323
Universal precautions sub-scale sub-set questions 11 to 20	.057 .278 .156 .072 .380 .265 .509 .078 -.031	.599 .730 .367 .437 .052 .231 .359 .476 .440	.113 .059 .118 .311 .258 .134 .151 .348 .342	.011 -.025 .392 .236 .477 .926 .253 .472 .228
Self-efficacy sub-scale question 25 to 28, 31, 33	.173 .245 -.047 .424 .064 .549	.192 .150 .710 .771 .542 .135	.799 .952 .273 .205 .118 .387	.194 .095 .318 .209 .351 .285
Environment sub-scale question 29, 30, 32, 34 to 36	.313 .559 .689 .507 .610 .513	.135 .169 -.053 .017 .217 -.058	.173 .376 .319 .073 .032 .400	.401 .206 .291 .298 .271 .209

Note: Questions for the *Modified* Registered Nurses' Patient Teaching and Communication Survey (Baldocchi, 2013). Bolded are the highest loading factors. Italicized are factors greater than 0.3 (Samuels, 2016) to show conceptual overlapping.

APPENDIX E

CANADIAN HEALTH LITERACY KNOWLEDGE-BASED QUESTIONS

The next two questions are on the health literacy levels of Canadians.

Q 13. To the best of your knowledge, what is the average reading level of Canadians

- ☐ Grade 8
- ☐ Grade 5
- ☐ Grade 12
- ☐ College level
- ☒ None of the above

Q 14. To the best of your knowledge, please select the correct answer regarding Canadians and Health Literacy (select all that apply).

- ☐ 55% of Canadians aged 16 to 65 scored below adequate on a health literacy
- ☐ health literacy scores often decline with age
- ☐ there is no significant difference between the average health literacy levels of men and women ages of 16 and 65
- ☐ 24 to 32% of foreign-born men and women have extreme difficulty with and only limited use of printed materials

APPENDIX F

CONSENT FORM

CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Ontario's Registered Nurses Knowledge, Comfort, and Self-efficacy Surrounding Patient Health Literacy (HL) Assessments; An Observational Mix-Methods, Cross-Sectional Study.

You are asked to participate in a research study being conducted by Sheena Gagnier, a registered nurse (BScN), and a Master's of Science in Nursing (MScN) student at the University of Windsor, Faculty of Nursing. If you have any questions or concerns about the research, please feel to contact the research team.

PURPOSE OF THE STUDY:

The purpose of this research is to better understand the level of knowledge and awareness of patient health literacy Ontario registered nurses (RNs) have and if health literacy assessments are being done in clinical practice settings. It will also be examined what things (e.g., self-efficacy, workplace environment, leadership style etc.) may or may not be associated with patient health literacy assessments for RNs.

PROCEDURES

Please read to understand the research package containing a consent form and surveys covering health literacy knowledge, awareness, use of assessments, environmental factors, provider factors, self-efficacy, and skills. You are being invited to participate in this research because you have self-selected to receive research inquiries from the College of Nurses of Ontario and because you are an RN who is working with patients. If you agree to participate in this study, you will be asked to complete a short survey package. You may complete the survey on any smartphone, tablet, or computer that has access to the internet.

Time points for surveys: You may only complete the survey at one point in time. That is, you are unable to save your responses and return to complete the remainder of the questions at another time.

If you wish to enter into the draw to win one of five Amazon gift cards your **contact information** will remain **confidential** and only the research team will have access to this information until the winners have received their gift card. Your name will be associated only with draw; it will not be associated with your survey answers. After the gift cards have been distributed, your contact information will be deleted.

Survey Package: This packet includes two surveys and baseline demographic questions regarding your nursing practice (e.g., number of years working) and should take no longer than 15 minutes to complete.

Information Collected: Your socio-demographic (age range) and clinical practice characteristics (type of facility currently working etc.) information will be collected in the surveys. Only the research team will have access to your information and data collected. This information is confidential; at no time will your name be linked to your survey answers.

If you have any questions about the surveys, please email Sheena Gagnier (maloneys@uwindsor.ca)

POTENTIAL RISKS AND DISCOMFORTS

There is low risk to you completing the survey package or participating in this study. Some of the questions ask you about your clinical practice. If you feel uncomfortable answering any questions on the

survey, please leave them blank. If you are unsure of what the questions are asking, you may contact the primary researcher by email for clarification (Sheena Gagnier, maloneys@uwindsor.ca).

If you wish to enter into the draw to win one of five Amazon gift cards your **contact information** will remain **confidential** and only the research team will have access to this information until the winners have received their gift card. After the distribution of cards your contact information will be deleted. Your name is not associated your **survey answers (ANONYMOUS)**, only with the draw, and there is a low risk of that list being exposed to anyone outside of the research team.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

If you choose to participate in this study, the information gathered from this research will be used to advance the scientific knowledge regarding health literacy (HL), HL assessments, nursing knowledge, and practice in Ontario. As well, this research has the potential to improve nursing practice and benefit patients, and to serve as a foundation for future research associated with HL assessments and nursing practice.

COMPENSATION FOR PARTICIPATION

You may self-select to enter to win a \$25 Amazon gift card upon your completion of the study in appreciation of your time.

CONFIDENTIALITY

Any information that is obtained in connection with this study (e.g., your name, email address for the draw) will remain confidential, and will only be accessed by the research team. The survey results collected in this study will be reported as aggregate data; thus, no individual person will be identified. Paper surveys (confidential) that have been completed will be stored in a locked filing cabinet to which only the research team will have access. All data collected from the survey responses will be stored on a password protected computer and on a secure University of Windsor server. All paper surveys and the list of names of those who entered the draw will be shredded after study completion.

PARTICIPATION AND WITHDRAWAL

Participating in this study is voluntary and is in no way associated with your nursing position or registration with the CNO. If you volunteer to be in this study, you may withdraw at any time during the survey by closing your browser and/or exiting the survey. There are no consequences of any kind associated with a withdrawal from this study at any time. You may also skip any questions on the survey that you do not wish to answer and still submit the remainder of your answers if you choose. Since this study is anonymous there is no way to withdraw your answers once you finish all of the questions and submit them.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Results of the study will be made available on the University of Windsor's Scholarship website.

Web address: <https://scholar.uwindsor.ca/research-result-summaries/>

Date when results are available: August 31, 2020

SUBSEQUENT USE OF DATA

These data may be used in subsequent studies, in publications, and in presentations. However, your anonymity will be upheld.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH PARTICIPANT

I understand the information provided for the study Ontario's Registered Nurses Knowledge, Comfort, and Self-efficacy Surrounding Patient Health Literacy (HL) Assessments. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given the option for a printable version of this information below.

If you wish to receive a copy of this consent information, please email: maloneys@uwindsor.ca

By proceeding to the survey, you are **consenting** to participate in this research study. Your **responses will not** be collected until you **click submit at the end of the survey**.

VITA AUCTORIS

NAME: Sheena Gagnier

PLACE OF BIRTH: Brantford, ON

YEAR OF BIRTH: 1983

EDUCATION: St. Anne's Highschool, Tecumseh, ON
2001

University of Windsor, BScN, Windsor, ON,
2013