ABSTRACT

Aim: This research aims to explore the relationship between health literacy (HL) and vaccination in nursing students with focus on the level of knowledge about vaccines and vaccination schedules, attitude towards vaccination, the intention to get vaccinated, as well as the practice of vaccination to discover the role of Health Literacy as an indicator of vaccine hesitancy.

Method: This cross-sectional study will comprise 254 international students and 146 Turkish students enrolled in the undergraduate nursing program in Cyprus International University, North Cyprus. The data will be collected using the online Google Form, and by adopting the questions from the European Health Literacy Survey. The frequency, percentage, mean, and standard deviation will be used for the descriptive analysis. Multiple regression analysis will be employed to analyze the relationship between Health literacy, health decision, vaccination and its predictors.

The data of the research will be collected by internet-based data collection technique (Google Forms) in April 2022.

In the study, "Personal Information Form" to determine the socio-demographic characteristics of the students will be given. In addition, other questions on the form adopted from the European Health Literacy Scale (2013) in measuring health literacy in populations will be used. Sorensen et. al (2013) on behalf of the HLS-EU Consortium created a form with 47 questions to evaluate how health information is accessed, understood, appraised and applied, also on how to prevent disease and promote health.

RESULTS:

KEY WORDS: Health Literacy, Vaccination, Nursing students

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CHAPTER 1

INTRODUCTION

1.1 Health Literacy defined

Health Literacy (HL) refers to the capacities of individuals to access and use information to their understanding for decision making related to the complex demands of their health care (Kickbusch, 2001; Adams and Corrigan, 2003). Bayati, Dehghan, Bonyadi, & Bazrafkan (2018); Afshari, Khazaei, Bahrami, & Merati (2014) defined "Health Literacy" as *"a combination of reading and listening skills, data analysis, decision-making, and the ability to implement these skills in health situations…"* Centres for Disease Control and Prevention (n.d.) called for a more comprehensive definition, entailing the following:

(i) Instead of focusing on people's understanding of health information, emphasize their capacity to use it.
(ii) Prioritize "well-informed" decision-making skills over "suitable" decision-making
(iii) Recognize that organizations have to address health literacy
(iv) Include an emphasis on public health

A patient or health care provider needs to be able to read, write, and comprehend oral health information as well as express their medical demands and make computations. The health data must be used after it has been acquired.

1.2 Health Literacy Levels in the world

Low health literacy skill has fast become a major healthcare problem in many societies, as it has been recognized to affect health response and increases the levels of illness, while simultaneously affecting an infinite proportion of the population around the world, including the United States as identified by Gillian (2014). A significant number of the world's populace do not have access to adequate or effective levels of awareness on HL to successfully satisfy the increasing complex

health services and care needs, thus, justifying the relatively high consequences such as long-term health conditions (HLS-EU Consortium, 2012; Gillian, 2014), inability to manage, interpret labels and take medications appropriately (DeWalt *et al.,* 2007; Murray *et al.,* 2009; Berkman *et al.*, 2011; Zhang *et al.,* 2014) and hospitalization with increased mortality rate, morbidity rate and emergency care (Baker *et al.,* 1999; Berkman *et al.,* 2004; Paasche-Orlow *et al.,* 2005; White *et al.,* 2008; Bostock and Steptoe, 2012; Castro-Sa´nchez *et al.,* 2016). Hence, this conclusively lay emphasis on the importance of exploring the sociodemographic background influence on health professionals' especially nursing student health literacy in conjunction with vaccination around the world.

Globally, the differences in the HL levels was found to be significantly low around the world (Durusu-Tanriover *et al.,* 2014; Goodman *et al.,* 2013; Sultan and Handan, 2018). By 2012, a comprehensive European Health Literacy Survey on HL finding around Europe revealed 12.4% poor and 35.2% problematic Health Literacy respectively. Additionally, data differences between member countries such as Bulgaria (26.9%), Austria (18.2%) was stated to be inadequate. A decade's worth of national data in the United States revealed HL sufficiency to remain consistent around 12% (Goodman *et al.,* 2013). In 2014, reports from Turkey Health Literacy Survey estimated 64.6% of the general adult population to have poor or problematic HL levels (Durusu-Tanriover *et al.,* 2014). This knowingly is responsible for the large percentage of individuals with low Health Literate knowledge, attitude and practice to use preventive health services (like vaccination); thus, the negative influence from their level of adherence to medical treatment and self-management of health (Lee *et al.,* 2015; Sand-Jecklin *et al.,* 2010; Sentell *et al.,* 2014; Smith, 2015).

More than any other demographic factor, including age, ethnicity, and race, literacy has an impact on health. People with low literacy levels may have trouble comprehending information related to health difficulties, such as treatment solutions, instructions, and ideas from their health mind provider. According to an estimate, in the United States of America, almost 75% of people with chronic illnesses have low literacy rates. In case it wasn't evident before, one of the largest issues affecting our species as a whole is poor levels of health literacy. The idea of Health Literacy (HL) affects not just systems of care but also individuals and medical professionals.

1.3 Health Literacy Levels in nursing students

Embracing health literacy is crucial for all nurses as it is a cross-cutting need. Nurses are in a unique position to give patients care that respects their cultural and linguistic differences and improves successful communication. Nursing students will be more agile to deliver patient-centered care that will improve the patient experience, patient safety, and ultimately, patient outcomes when nursing faculty appropriately educates their students about the implications of low health literacy and gives the students opportunities to integrate health literacy principles (Lynch, 2015).

Although, healthcare professionals like nurses are trained to recognize and educate struggling patients, and help them interpret health-related instructions such that involve medication, treatment management and discharge planning (Mosley and Taylor, 2017; Sultan and Handan, 2018), there is basically limited evidence that reveals support, knowledge and experience provision required to assist low health literate individuals by nursing students according to Cormier and Kotrlik (2009); Williamson and Chopak-Foss (2015); Zhang *et al.,* (2016); Rajah *et al.,* (2017), which is why majority of nursing schools today are integrating foundational HL curriculum for future nurses during the students' professional trainings as care providers, while also performing patient advocate roles (Cormier, 2006; Sultan and Handan, 2018). Individuals and communities' empowerment are marked as an avenue for all competent registered nurses to practice their ethical responsibilities and intervene with appropriate solution on patient health literacy limitations, coupled with the understanding of their wellness and self-care conducts (Cormier, 2006; Sand-Jecklin *et al.,* 2010; Sultan and Handan, 2018). In this context, it is predicted that improving HL levels of nurses during the student years will contribute to positive health outcomes in individuals and to promote health care quality. In an actual concept, HL advancement into multidimensional practices that involves advanced skill network, from preliminary functional aids combination in a medical setting, has influenced the health system, with functional, interactive, and critical facets distinctiveness, thus, identifying similarities and divergences (Nutbeam, 2000; Sørensen *et al.,* 2012; Castro-Sa´nchez *et al.,* 2016).

1.4 Aims of this Study

This study sought to determine what factors may be related to the health literacy knowledge of nursing students on vaccination across all levels currently enrolled in nursing program in Cyprus International University (Adhikari *et al.,* 2020; Tu *et al.,* 2020; yang *et al.,* 2021) and to identify the effect of health literacy on vaccination.

Thus, this research aims to explore the role of health literacy (HL) in vaccination with focus on how information about vaccines and vaccination schedules are acquired and understood, the attitude towards vaccination, the intention to get vaccinated, as well as the practice of vaccination within nursing students.

1.5 Significance of this Study

In order to explore this proposition, this study seeks to determine the health literacy levels of university nursing students on vaccine literacy and factors that affects their validation on vaccination. Findings from the study will provide reference to nursing students and health practitioners on how accessing, recognizing, and using information can help maintain a healthy life by implementing precise health literacy practices for vaccination.

As there is an overwhelming need for increasing the awareness of health literacy among healthcare providers, this will provide beneficial updated experience to curb similar major public health emergencies (such as the vaccine preventable diseases) in the future and reference for conducting scientific prevention and control during a pandemic (Jia *et al.,* 2021). This study could raise awareness and facilitate the integration of relevant courses into curricula by determining health literacy-related knowledge of nursing students. It will also guide initiatives oriented at increasing the awareness of other health professionals, in connection to also help increase the awareness of health practitioners in the field of health literacy as relative to their knowledge on vaccine education for vaccination.

1.6 Methodology

A total number of 393 active nursing students currently enrolled in Cyprus International University, completed self-administered questionnaires written in English and Turkish Language. The questionnaire contained 30 demographic questions and 47 questions adapted from the HLS-EU-Q47 of the HLS-EU Consortium for the European Health Literacy Survey (HLS-EU).

At the data collection cut-off date, 393 questionnaires were collected with 381 being usable for the study. Just 12 of the questionnaires were rejected because of their incompleteness, making it 96.95% response rate and therefore acceptable for the study.

CHAPTER 2

LITERATURE REVIEW

Many people in the healthcare industry are unfamiliar with the notion of health literacy, but because it has such a broad impact on health and wellbeing, researchers, policymakers, and physicians (nursing students) have become increasingly interested in it. In comparison to social and economic status, education, gender, and age, health literacy is seen to be a better predictor of health outcomes (American Medical Association, 1999). Only 13% of Americans have adequate health literacy, which results in an additional $73 billion in healthcare costs each year (National Academy on an Aging Society, 1999; White, 2008). Regardless of the ailment at hand, those with poor health literacy have worse health (DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004). Both the patient and the practitioner (nursing student) are involved in the dynamic process of health literacy (Paasche-Orlow & Wolf, 2007). Poor health literacy is particularly common in vulnerable groups like the elderly, minorities, people with poor education levels, and people who have chronic diseases (DeWalt et al., 2004). People with low to moderate healthcare literacy skills suffer from a variety of consequences, such as an inability to practice good self-management, higher medical costs brought on by more medication and treatment errors, more frequent hospitalizations, longer hospital stays, more visits to their healthcare provider, and a lack of the necessary abilities to secure the services they require (National Academy on an Aging Society, 1999). Low health literacy has enormous implications, but there is still a lot of misunderstanding about the concept and what it means for healthcare professionals (nursing students).

In a document arguing for minimum health education requirements for all grade levels in the United States (US), the phrase "health literacy" was first used (National Library of Medicine, 2000). However, the concept did not receive broad attention until the 1992 National Assessment of Adult Literacy was published (NAAL). Despite the increased focus on this idea, academics have yet to agree on a definition of the term; numerous definitions of health literacy have been produced, each offering a somewhat different viewpoint. The World Health Organization (WHO), the American Medical Association (AMA), and the Institute of Medicine have created some of the most generally used definitions of health literacy (IOM). Health literacy is described by the WHO as *"the cognitive and social abilities that determine an individual's motivation and capacity to*

acquire, comprehend, and make use of information in ways that promote and preserve good health" (WHO, 1998, p. 10; Egbert & Nanna, 2009).

Health literacy (HL) is increasingly becoming as important as other branches in the field of health over the years. According to medical practitioners, HL is the collective cognitive-social skills involved in accessing, understanding, and using health information in order to protect and promote health from individual perception (World Health Organization, 2017). HL is not distinct to individuals only, it is as well relative to health systems professionals (Hernandez, 2012). This is associated with the capability of professionals to recognize struggling patients with disabilities in understanding health-related instructions. As such, it is evident that they as well work to ascertain patients' compensatory knowledge for HL limitations, and intervene appropriately to assure patients' understanding of their health conditions and self-care behaviours (Sand-Jecklin et al., 2010).

The dexterity in reading, listening, making comprehensive analytical thoughts for decision is required as personal skills both for individuals/patients, as well as for health practitioners in HL (Lee et al., 2015; Sentell et al., 2014; Sørensen et al., 2012). As such, this provides individuals with the privilege of reassured control over their health, for appropriate healthcare decisions, with better health outcome measures (Mosley and Taylor, 2017).

Logically, public health and HL are two intertwined important concepts to wellness (Sørensen et al., 2012; Zhang et al., 2016). With the rapid development in the complex requirement for a sustainable health care system, the demanding integral contribution of health practitioners/individuals that can help make informed adaptive health decisions, to treat patients of acute or chronic health problems, and breakdown the ambiguous health terminology in devices usage instructions is without doubt essential (Sand-Jecklin et al., 2010). Among this practitioners, nurses' vital role in providing health care information to individuals in a variety of settings is increasingly on demands. Therefore, it is crucial that nurses are prepared to face the challenges of working with patients who may have limited literacy skills (Torres and Nichols, 2014).

A large number of local health center nurses and other healthcare professionals have limited or no adequate trainings on how to identify, interact and translate health information for patients having lower health literacy levels use (DeSilets and Dickerson, 2009; Speros, 2009). In educating

individuals, nurses particularly bridge remarkable subject gaps that require information on medication, treatment and discharge planning, among several other interjectory roles and responsibilities (Chang et al., 2017; Mosley and Taylor, 2017; Sand-Jecklin et al., 2010). Nevertheless, when effective communication is not achieved from the nurse-patient contact, there can be persistent issue with definitive health measures. Patients do not understand what nurses have taught them, effective communication has not taken place (Parker and Gazmararian, 2003).

2.1 Correlation between Health Literacy and Diseases

Recent updates on the interaction between HL and prevalence of disease have suggestively proven the need for effective and efficient knowledge, attitude and practice based measure, as regards the influence of HL on the clinical and social outcomes of infectious diseases (i.e. Covid'19 pandemic). Taking the covid'19 menace as an example around the world, this brought light on how prepared the forefront medical experts are for such similar medical disaster. Along with this, it gave an insight on how scientists, organization and governmental prepared measures to contain the viral spread within the first one week of outbreak suffer non-acceptance due to the communication limitation from health practitioners' inadequacy on COVID-19 disease. Unfortunately, COVID-19 can be asymptomatic or symptomatic depending on patient. Consequently, prevention and control should be the two-way combat focus (Jia et al., 2021). This also can help reduce the negative panic mentality and rumors spread about the disease and other similar outbreaks during its early stage.

Vaccinations concept of 'vaccine literacy' to most patients particularly those with low literacy and numeracy is quite complex, if not specially handles with cognitive-social skills. Understandably, Bloom's Taxonomy of Learning dictates that skill levels have impact on the extent of cognitive processing applied to information (Fig. 1).

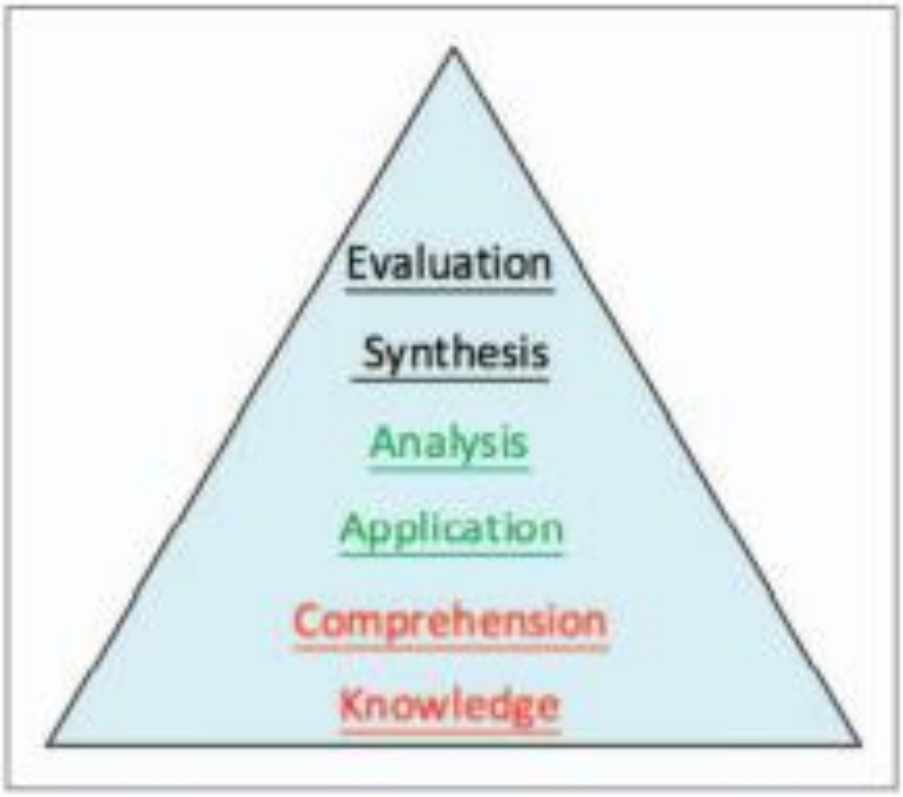

Figure 1. Bloom's Taxonomy of Learning

At the lowest skill level people may know, but not understand information. More sophisticated skills are required to apply knowledge in various settings and to be able to analyze the information 'de novo' rather than having to rely on pre-analyzed data. Being able to deconstruct and reconstruct information and to evaluate the relevance of information to one self, one's life and work environments requires the highest level cognitive skills. This is of importance in vaccination information, which requires cognitive processing at all these levels as patients must not just understand but evaluate and act upon vaccination information (Gillian, 2014).

Vaccine producers should also take account on literacy and numeracy level required to understand and use and/or take vaccines for proper acceptance. This should include the design and layout of the material, whether materials can be produced in varying formats to suit learning preferences

and whether additional support is required in understanding and applying the information thus enabling patients to make decisions that are right for them (Jia et al., 2021).

2.2 Concept of Vaccination

Vaccination is essentially a biological preparation that promotes the development of acquired immunity against a particular illness. A vaccine contains particular antigens that result in particular antibodies. It is frequently created using weakened or dead versions of the bacterium. The body's immune system is stimulated by the antigens to identify the specific agent as an alarm, combat it, and retain a memory of it so that the immune system may more effectively operate and eliminate these particular bacteria. Most conditions call for the preventative use of vaccines. Particular diseases require the administration of specific immunizations. Numerous studies have been conducted to confirm the efficacy and effectiveness of vaccinations. Herd immunity is attained through vaccination, which is also substantially to blame for the worldwide eradication of smallpox and the control of some diseases. Vaccination is the most efficient way to prevent infectious and communicable diseases. (Bartleby Research, 2022)

For this thesis and in alignment with the collected data from the questionnaire, research about vaccination was stream-lined to some vaccines.

Early in December 2019, Wuhan City, Hubei Province, China had an outbreak of the coronavirus illness 2019 (COVID-19), which was brought on by a brand-new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The epidemic was deemed a Public Health Emergency of International Concern by the World Health Organization on January 30, 2020. 49,053 laboratory-confirmed deaths and 1,381 total deaths have been reported as of February 14, 2020, worldwide. Many governments have implemented a range of control measures as a result of perceived illness risk. To compile knowledge regarding the virus and the current pandemic, we reviewed the body of publicly available literature (Harapan, et al., 2020). To gain a deeper understanding of participants' activities regarding COVID-19 vaccination hesitation, hierarchical multiple regression analysis was used to model the degree of applying mask-wearing, hygiene rules and physical distance, and the level of COVID-19 vaccine literacy. It was discovered that health system mistrust and health literacy were the two most significant factors influencing vaccine

hesitation. The overall impact of healthcare system mistrust on vaccine reluctance was statistically significant, according to the mediation analysis. Participants with inadequate health literacy and a high degree of mistrust for the medical establishment were more reluctant to get vaccines. The research findings revealed that the association between vaccine reluctance and health system mistrust was mediated by health literacy. To lessen vaccine reluctance during COVID-19, health officials (nursing students) must take into account the dynamic and complicated aspects surrounding the health care system skepticism and health literacy. (Turhan, Dilcen, & Dolu, 2021) (Frederiksen, Plesner, & Stellfeld, 2003), in Denmark, researched and found out that the childhood illness 'Varicella' is contagious. There is a vaccine that is both secure and reliable. Although research conducted outside of Denmark has shown a significant incidence of complications, varicella disease often has a moderate course. There are no records of morbidity and mortality in Denmark related to varicella-zoster virus infection. The implementation of routine immunization will lead to a decline in the disease's incidence and a decrease in the frequency of complications brought on by the sickness, based on experience from the USA. Additionally, it will provide indirect protection for those who aren't immunized (herd immunity). There is a possibility that varicella immunization could alter the disease's epidemiology. The frequency and severity of herpes zoster may also be impacted by routine vaccination. We will have a stronger foundation to decide whether to include varicella immunization in the Danish children's vaccination program after learning from the US experience.

Access to care and health literacy are important enablers of preventative health practices. Little research has been done on how better health insurance coverage has affected Korean Americans' utilization of preventative health services since the Affordable Care Act's adoption in March 2010. With the aid of a survey and practical sampling, a descriptive cross-sectional study of 377 Korean Americans aged 18 and over was carried out in Texas by (Lee, et al., 2021). Despite having health insurance in 79% of the sample, 14% of the population had care delays in the previous year, and 32% had never visited a doctor or other healthcare professional. Only 11.6% of people were confident in their ability to fill out medical documents, while 69.5% had low levels of confidence. Mammography had the highest compliance rates (50.4% at ages 40 to 54 and 46.6% at ages 55 and above), followed by Pap tests (29.4% at ages 21 to 29 and 76.4% at ages 30 to 65 and 72.2% at ages 66 and over), and colorectal cancer screening at ages 45 and over (stool tests 15.1%; sigmoidoscopy 27%; colonoscopy 51.3%). Multiple logistic regression studies showed that self-

reported cancer screening was substantially correlated with household income, gender, health insurance, and health literacy. Multiple logistic regression studies showed that self-reported cancer screening was substantially correlated with household income, gender, health insurance, and health literacy. Korean Americans in this study have marginalized health literacy, limited health insurance literacy, low cancer screening compliance, and underutilized health care services while having increased health insurance coverage. The findings of this study indicate many methods for raising Korean Americans' knowledge of health issues and health insurance, which may also be useful for other communities facing comparable difficulties. (Zhang, Or, & Chung, 2020) believed that one of the main obstacles to older persons practicing illness prevention was discovered to be a lack of health literacy. However, it is still unknown how various health literacy processes connect to the vaccination-related competencies of older adults. The current study used the European Health Literacy Survey (HLS-EU) to assess older persons' abilities to acquire, understand, evaluate, and use health information, as well as how these abilities relate to perceived difficulties with vaccination-related behaviors. A quantitative exploratory investigation using structured questionnaires was carried out using a cross-sectional design. Four hundred and eighty-six older individuals who reside in the neighborhood and are 65 years of age or older were chosen from Hong Kong non-governmental organizations. The 47-item HLS-EU (HLS-Asia-Q), which examines the skills in obtaining, comprehending, evaluating, and using health information across the fields of health care, disease prevention, and health promotion, was translated into Chinese to test health literacy. To investigate the relationship between several facets of health literacy and the information processing surrounding vaccinations, linear regression was used. The results demonstrated that older persons in Hong Kong had poor health literacy, especially when it came to information evaluation. Making vaccination decisions was more difficult when people had lower levels of ability in acquiring and evaluating health information. Our findings suggested that health-promotion programs enhancing the comparison and appraisal of vaccination information should be made available to the general public by identifying the health literacy processes connected to vaccination. In the meanwhile, health professionals (nursing students) and the media should simplify the health messages they convey and make them simpler for older persons to access and understand. Doing so will increase older adults' propensity to use vaccines and stop the spread of infectious illnesses.

2.3 The Impact of Infectious diseases on human health

The evolutionary threshold of infectious and viral diseases outburst has presented alarming threats to human health, as well as, environmental and societal balance. Despite the numerous clinical, societal, and ecological attempts to control, prevent and monitor the emergence of deadly novel infectious pathogens, and the re-emergence of latent diseases, there remain a huge sustainability deficit. Consequently, this influences the discovery, design and development of therapeutic agents to counter the surging known infectious disease and early preparation for unknown infectious diseases spread (Castro-Sa´nchez *et al.,* 2016). In light of this, other efficient responsive approach such as improvement on healthy living conditions, hygienic habit and practices, and adequate access to information and education are considered, to raise the bar against health threats posed by infections and diseases, coupled with the availability of adequate clinical care (Saker *et al.,* 2004).

2.4 A brief review on vaccines

One's immune system and body's natural defenses are built up against particular infections, with the aid of these vaccines which are biological preparations, such as those made of antibodies, lymphocytes, or messenger RNA (mRNA), that are supplied primarily to prevent disease, and include suspensions of weakened, dead, or fragmented bacteria or poisons. Vaccines offer defense against a wide range of illnesses, including cervical cancer, cholera, COVID-19, diphtheria, Ebola virus, measles, Japanese encephalitis, meningitis, mumps, pertussis, pneumonia, polio, rabies, rotavirus, rubella, tetanus, typhoid, varicella, yeast infection and the Hepatitis B virus. Edward Jenner, a British physician, developed the first vaccination in 1796 by using the cowpox virus (vaccinia) to give humans immunity against smallpox, a similar virus. But before that, Asian doctors used the concept of vaccination by giving children dried crusts made from the lesions of people who had smallpox to prevent the illness. While some individuals developed immunity, others contracted the illness. Jenner contributed by using a vaccine that was similar to smallpox but safer. Thus, he took advantage of the rather uncommon circumstance in which immunization to one virus offers defense against the symptoms of another viral illness. By administering sheep with a mixture containing attenuated versions of the bacillus that causes the disease in 1881, French microbiologist Louis Pasteur proved vaccination against anthrax. He eventually developed a rabies protective suspension four years later (Brunson, 2021; World Health Organization, 2021).

2.5 Vaccination and Vaccine education

Vaccination persists as a majorly recommended preventive precision intervention promoting self-efficacy practice among citizens, and as such encouraging individual participation in various public health intervention is paramount (Marais *et al.,* 2015; Castro-Sa´nchez *et al.,* 2016). Vaccine education is complex and consequently challenging to communicate to patients, majorly to underrepresented low literacy and numeracy citizens, and often requires informed health professionals such as nurses, doctors, etc., to interpret. Principally, patients' and professionals' knowledge about the disease or illness, the risks of contraction, the benefits and risks of being vaccinated, and the potential risk of vaccination failure, ultimately dictate their responses to, attitudes towards and practice of vaccination (Gillian, 2014), therefore, adequate information dissemination and counsel are required for successful professionalism among specialists and individuals. More so, the level of awareness, and knowledge to implement this information vastly depends on the individual's (both citizens and practitioners) socio-demographic profile. Hence, this ultimately impacts the decision made and taken by health care services. Although, the socio-demographic remains highly studied, health literacy involvement has been on the limited experimental end (Castro-Sa´nchez *et al.*, 2016).

Vaccines have been proven an effective and efficient preventive remedy for several medical ailments, disabilities, vaccine-preventable diseases and even, death (Chiara *et al.,* 2018). In recent studies, vaccine keeps serving as a potent protection from a wide range medical complications, with striking proofs from the recent emphasis on the need of vaccination and immunization. While vaccination for the common human disease have made a significant steady coverage over few decades, the administration dependently differs on the type of vaccine. Notably, vaccines such as diphtheria-tetanus-pertussis (86%), polio (86%), hemophilic influenza Type B (64%), pneumococcal (37%) and rotavirus (23%) were largely administered to infants worldwide as a protection against the diseases respectively in 2015 (WHO, 2017). Nonetheless, there remain questions and doubts on the authenticity of vaccination and the science behind the development, which has resulted to vaccine hesitancy (refusal or delayed acceptance on the receiving end (patients) for vaccination regardless of offers from the health and vaccine service providers) in the global front ((MacDonald, 2015; WHO, 2017; Chiara *et al.,* 2018). It is characterized by a complex

decision inclusive process, based on an element of complacency, convenience, and confidence (MacDonald, 2015; Chiara *et al.,* 2018).

Infectious diseases such as Covid'19 have caused great harm to the economic and social lives, and not just the health of a large number of people around the world. North Cyprus notwithstanding, continues in its fight against the virus, although, the lack of infrastructure and resources continue to pose a threat (Berberoglu, 2020). With the relatively scarce clinical measures available, it is optimally paramount for the general public to learn and understand precautionary behavioral practice and safety for efficient disease feedback response and surveillance efforts at the policy level (Nelson *et al.*, 2007; Lee & You, 2020; Anderson *et al.*, 2020).

Evidently, the health care sectors first line of response to the imperial covid'19 pandemics and feedback from the populace have shifted their gazed to the importance of educating, engaging, and mobilizing the public to the essentiality of their health literacy and to actively participate and prepare them for public health emergencies, thereby, reducing the overall population's vulnerability (Anderson *et al.,* 2020). As to that, it has been reported that a collective practical behavior like engaging in personal hygiene practices, maintaining the required social distance in preventing and controlling the viral and pathogenic agents spread can bring about a dramatic decrease in morbidity and mortality rates (Anderson *et al.,* 2020; Ferguson *et al.,* 2020). Hence the new status quo should be the consistent practice of preventive behaviors among the public (Lee *et al.,* 2021).

2.6 Vaccine literacy

Comprehensively, the concept of 'vaccine literacy' from the HL standpoint means a consideration on vaccine attitudes and hesitancy, which is not simply about vaccines definition, but a definite and understandable determinants of vaccine uptake. This is specifically complex, and often call for certain multidimensional skills (Chiara *et al.,* 2018). Considering this, vaccine education and information communication is particularly tough when patients are under low HL category (Rowlands, 2014). More so, authentic information mining seeks out for critical and evaluation skills, as the volume of discharged information on the Internet heighten (Chiara *et al.,* 2018). As

such, HL, and vaccine literacy, can influence vaccine uptake, a potential determinants of vaccine hesitancy (Biasio, 2017).

2.7 Health Literacy and Vaccination

As more evidence on the massive impact of low health literacy is becoming a pandemic in medical practices, increasing interventions and measures adequately to support citizens and medical practitioner are being developed to resolve the lapses. In attempting this resolution, focus on health and social services designs that will ensure access, understanding and using information like vaccination, will influence a beneficial decision making for individuals without a demerit on their abilities (Nielsen-Bohlman *et al.*, 2004; Nutbeam, 2008; Castro-Sa´nchez *et al.*, 2016; Mosley and Taylor, 2017). In the same manner, self-health check is a mandatory duty health services and care workers are expected to provide for their patient and the general citizens (Sultan and Handan, 2018).

2.8 Effects of Health Literacy on Vaccination

World Health Organization (2021) stressed the need for health literacy on vaccination and gave the three all-encompassing objectives by which vaccination benefits our world;

(i) A healthy, productive population is built on vaccination. Over the next ten years, every dollar spent on vaccination programs in 94 low and middle-income countries would generate more than US$ 52 in returns thanks to lower healthcare expenditures, increased productivity, and a decrease in long-term impairment (Sim, Watts, Constenia, et. al, 2011). Additionally, vaccinations save nations against the devastating economic effects of disease epidemics. The COVID-19 pandemic has shown us that disease outbreaks are expensive and disruptive. They have the power to severely disrupt clinical services, health systems, and public health initiatives while keeping kids out of school. Additionally, they might be detrimental to trade, tourism, travel, and general development. Treatment expenses and missed wages are routinely paid for seasonal illnesses like influenza. Strong health systems and vaccination programs can quickly

detect and reduce the burden of infectious diseases, and vaccinated societies are resistant to infectious disease epidemics. At the individual level, vaccinations assist in lower healthcare costs for families and offer financial protection against out-of-pocket expenses that could have a disastrous effect on household finances.

(ii) Vaccination keeps individuals healthy and has significantly decreased the incidence of infectious illness deaths. The mortality rate for children under the age of five decreased by about a quarter between 2010 and 2017 (Global burden of disease, 2017). Since 2000, the measles vaccination alone has avoided 25.5 million deaths, and since 1988, occurrences of polio, which can result in lifelong paralysis and occasionally death, have decreased by more than 99% (Patel, Goodson, Alexander Jr, et. al, 2020; World Health Organization, 2019). Vaccinations help older people as well as newborns and youngsters. They can safeguard the health of the working population, the elderly, and the vulnerable, preventing infection-related malignancies brought on by viruses like hepatitis and HPV and allowing individuals to live longer healthier lives. Additionally, fewer infections reduce the likelihood of disease transmission to family members and other community members.

(iii) The security of world health depends on vaccines. Measles and COVID-19 outbreaks are only two recent examples of how swiftly disease can move between nations in our increasingly linked world. 2019 saw an upsurge in measles cases in nations where the disease had previously been eradicated, in part because of low traveller vaccination rates (Patel, Lee, Redd, et. al, 2019). We can protect ourselves against infectious disease dangers in the future by immunizing ourselves. The International Health Regulations (2005) stipulated that vaccination and disease surveillance are essential skills. They support resilient, long-lasting health systems that can react to pandemics, hazards to the public's health, and catastrophes (Semenza, Sewe, Lindgren, et. al, 2019). According to a recent study, the occurrence of cross-border infectious disease concerns is connected with a 10% increase in these fundamental competencies (such as risk communication and surveillance) (Semenza, Sewe, Lindgren, et. al, 2019). Vaccination is essential for the prevention and control of communicable diseases, for increasing national productivity, which benefits economies, and for promoting a safer,

healthier global environment. Vaccines have a significant return on investment and are essential for enhancing global health and wellbeing for all people.

In educating nurses on the effects of health literacy on vaccination, Lynch (2015) stressed three primary topics in supporting their efforts;

(i) Principles of health literacy can be incorporated into patient care and education in a variety of ways. Nurses should learn how to use a universal precaution strategy. Assumptions should never be made about someone's degree of health literacy based on how they appear, what they do for a living, or how many years of schooling they have taken. Health literacy abilities vary from person to person and from context to context, therefore everyone occasionally has low health literacy. The message's content should therefore focus on the actions, abilities, or behaviours that produce the intended health results (Cornett, 2009; Speros, 2011).

(ii) Whenever there is communication with patients, terminologies should be kept simple. When discussing medical facts, nurses should avoid using technical language. It will be easier for a patient to understand if the nurse uses terminology they are familiar with. Plain language is in the best interest of all patients. Speech should be made calmly, in simple terms, and the use of technical or medical jargon should be refrained from. For instance, instead of saying "oedema," the nurse should say "fluid in the legs" (Sudore & Schillinger, 2009; Castro, Wilson, Wang, & Schillinger, 2007).

(iii) The teach-back method should be used to gauge how well the patients comprehend the knowledge given to them. Teach-back entails asking patients to clarify the intended message in their own words or exhibit the objective skill being taught before providing a brief justification. For instance, the nurse can inquire, "Explain in detail how you intend to take your medication each day." The patient should be politely asked to repeat the information after the nurse has explained it to them. The nurse can then repeat any information if necessary and confirm knowledge once more until the patient can accurately say it. The patient shouldn't perceive this as a test.

(iv) Information should be grouped or "chunked," and each should only require 5–10 minutes of explanation. It is important to give the patient enough time to comprehend the information.

(v) Phrases like "factor," "avoid," "active role," "generic," or "adverse," as well as other abstract and categorical terms should be avoided. Words like "adequately," "routinely," "often," "often," or "as needed" are readily misunderstood and shouldn't be used because they ask the patient to draw conclusions or make judgments (Speros, 2011; Schillinger, Piette, Grumbach, et. al, 2003).

(vi) Instructions should be given using explicit and specific language, especially when they concern prescriptions and vital self-care abilities following discharge. Instead of saying, "Take your high blood pressure tablet twice a day," the nurse should instruct the patient to "Take your pink pill in the morning after breakfast and at night after a snack before going to bed."

(vii) One of the most important components of effective communication with low literacy patients is confirming and assessing understanding. Asking "What questions do you have?" is a wonderful technique to open discourse. Posing queries like "Do you understand?" and "Do you have any questions" should be avoided. Experience has revealed that despite having numerous queries and misconceptions on the subject matter, patients frequently respond "yes" to these questions.

(viii) Over the past 20 years, the developing idea of health literacy and its connection to health outcomes have received much-needed attention (U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010; Wilson-Stronks, et. al, 2008; Parker & Ratzan, 2010). To address the issue of low health literacy, a focus must be placed on effective communication and the adoption of evidence-based techniques, according to numerous safety and quality health care programs. Every patient's treatment plan must include evidence-based strategies that advance health literacy, according to nurses. Every nurse-patient encounter should aim to give the patient the tools they need to find, comprehend, and act on the information that is crucial to their health and quality of life (Owens, 2015).

2.9 The Importance of Vaccine education in nursing

Findings have suggested that health-promotion programs enhancing the comparison and appraisal of vaccination information should be made available to the general public by identifying the health literacy processes connected to vaccination. In the meanwhile, nursing students and the larger health professionals should simplify the health messages they convey and make them simpler for people to access and understand. This will increase their propensity to use vaccines and stop the spread of infectious illnesses. The simplicity, however, should not be mistaken for subpar knowledge of health literacy and poor health practices in nursing students as this can pose a serious challenge to the health of a population. The inclusion of rigorous health literacy and health practice education in the nursing curriculum is the first step in resolving this issue.

2.10 Vaccination and Health Literacy Inadequacy

It is recognized that inadequate health and vaccine literacy contributes to health/vaccination inequalities as it is more prevalent among lower socioeconomic groups, ethnic minorities, the elderly and those with long-term conditions or disabilities (Sihota and Lennard, 2004). Additional supports for health workers on the assessment of the health and vaccine literacy helps identify service users with further guidance. Nonetheless, most are confronted with contrasting conceptualizations of this term and little guidance about the sort of assessment that would be most appropriate, especially in socially deprived and ethnically diverse areas (Chinn, D. and McCarthy, 2013). For researchers and healthcare providers, reviews of existing measures of health and vaccine literacy brings dissatisfaction regarding the theoretical underpinnings of current measures, their reliability and validity, and suitability to re/al life healthcare settings (Chinn and McCarthy, 2013). Measuring health and vaccine literacy is particularly challenging based on it emerging and evolving construct (Nutbeam, 2008).

2.10.1 Vaccination-related Behavior

The relationship between HL, health outcomes, and the use of healthcare resources has already been well established, with relative significance on infections and infectious diseases. The European Centre for Disease Prevention and Control (ECDC) has described the role that HL can play regarding infectious diseases, with a paucity of data and experiences on the relationship and

impact of HL on a variety of clinical and social outcomes from infectious diseases including preventive behaviors such as vaccination (D'Eath et al., 2012).

As HL appears to be a key determinant in vaccination-related behaviors, views are that complex information and the multiple steps involved in the successful adoption of immunization are incomprehensively limited to citizens that lacks or with insufficient HL (Ratzan, 2011). This population often remain unvaccinated, as compared to individuals with adequate HL, which in turns allows avenues for negative ideas or feelings not based on adequate evidence to influence decision-making about vaccines (Castro-Sa´nchez *et al.*, 2016). HL and education were shown to play a fundamental role in shaping effective perceptions of vaccine safety and benefit, suggesting appropriate resources for interventions to improve vaccination rates in children. To remedy such inequalities, low-literacy information tools have been shown to successfully increase vaccination rates in population groups most likely to be under-vaccinated (Thomas et al., 1999; Castro-Sa´nchez *et al.*, 2016).

2.11 Common Health Literacy Tools

At the onset, health literacy was meant to be the tendency to read and write with numeracy skills by researchers which is as termed 'being able to apply literacy skills to health related materials such as prescriptions, appointment cards, medicine labels, and directions for home health care' (Chinn and McCarthy, 2013). However, this skills are quite evaluated today with the application of tools among which are, The Test of Functional Health Literacy in Adults (TOFHLA), the Rapid Estimate of Adult Literacy in Medicine (REALM), the Set of Brief Screening Questions (SBSQ), Newest Vital Sign (NVS), European Health Literacy Survey Questionnaire (HLS-EU-Q) and all other aspects of Health Literacy Scale (AAHLS) either through direct testing of reading abilities or self-report, in order to minimize the negative outcomes of inadequate health literacy in a population and raise public health standards (Weiss et al, 2005; McCormack et al, 2010; D. and McCarthy, 2013). The structures of the instruments are different from each other, but in general, they evaluate writing, understanding and simple arithmetic abilities of individuals (Bodur et al., 2017). As individuals need a wider range of cognitive and social skills beyond basic reading and writing skills to deal with and act on health information in all its presentations, this is essential for

a re-conceptualized health and vaccine literacy construct (Chinn and McCarthy, 2013; Peerson and Saunders, 2009).

2.12 Health Literacy Instruments

Numerous health literacy instruments have been created by researchers throughout the years to measure various health literacy domains and dimensions in the general population. These self-reporting instruments assess several elements of gaining access to, comprehending, evaluating, and applying healthcare-related knowledge as well as practices. Munangatire, Tomas, & Mareka (2022) researched and provided a list of some of the most popular instruments and their measured parameters:

(i) Reading proficiency in the adult general population is assessed using the Rapid Estimate of Adult Literacy in Medicine (REALM) (Davis, Crouch, Long, et. al., 1991)

(ii) The general public's reading and comprehension skills in healthcare settings are assessed by the Test of Functional Health Literacy in Adults (TOFHLA) (Parker, Baker, Williams & Nurss, 1995)

(iii) The Newest Vital Sign (NVS) measures the reading and math abilities of patients with a focus on functional health literacy (Parker, Baker, Williams & Nurss, 1995)

(iv) Reading, oral communication, and internet usage are all functional health literacy skills that are evaluated by the Health Literacy Skills Instrument (HLSI) (Altin, Finke, Kautz-Friemuth & Stock, 2014)

(v) The European Health Literacy Questionnaire (HLS-EU-Q47) (Osborne, Batterham, Elsworth, et. al, 2013)

(vi) The HLS-EU-Q16 (Sørensen, Van den Broucke, Pelikan, et. al, 2013)

(vii) The Health Literacy Questionnaire (HLQ) (Sørensen, Van den Broucke, Pelikan, et. al, 2013)

(viii) The Nursing Professional Health Literacy Scale is designed specifically to assess nurses' health literacy (NPHLS) (Lambert, Luke, Downey, et. al, 2014)

CHAPTER 3

METHODOLOGY AND SAMPLE SIZE

Poor health outcomes have been linked to low health literacy levels. An organization cannot be expected to develop a healthcare service that supports the growth of health literacy among its users if its workforce (nursing students) is not health literate. The purpose of this cross-sectional study was to compare regionally and across year groups in terms of the health literacy profiles of undergraduate student nurses. From the 22nd of May to the 22nd of June, 2022, a study examined the health literacy profiles of 400 undergraduate student nurses from Cyprus International University through an anonymous online survey adapted from the European Health Literacy Survey Questionnaire (HLS-EU-Q). The findings reveal specific, significant differences in health literacy profiles across age groups and academic year levels, for instance, in the ability to locate reliable health information. The levels of health literacy vary by location, but they might all be raised. The findings of this study contradict preconceived notions and give instructors clear guidance on what student health literacy might resemble after graduation. Graduating nursing professionals play a crucial role in promoting and mediating a health system that is health literate, as well as in helping patients become more health literate. (Balmer, et. al, 2020)

3.1 MATERIALS

A cross-sectional and descriptive survey (Google form) will be used to identify the effects of health literacy on vaccination in nursing students. The Health Literacy survey questions will be a forty-seven-item questionnaire. This survey will be developed to evaluate the information, comfort, and perceived skills of a nursing student at discovering, evaluating, processing, understanding, and implementing learned health information in preventing the contraction of vaccine-preventable diseases and promoting wellbeing. Each question is measured on a scale of 1-5 interpreted as ‘very difficult to ‘I don’t know.

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3.2 Data Gathering

After obtaining their permission, the survey will be used to collect data from the responses of a population of voluntarily participating International and Turkish nursing students. The University Ethical Review Committee will also provide its ethical permission for conducting this activity.

The "Informed Consent Form" will be provided to the participants at the start of the study for reading and approval. In this form, the participants' consent to participate in the study will be requested after they have been informed about the study's subject, its conduct, and its confidentiality policies. Following that, they will be required to complete the online Information form which comprises the following: ages, genders, academic years, countries, financial statuses, marital statuses, family types, educational levels of their parents, chronic illnesses, if any, contraction of COVID-19, if any and type of vaccine received, collection of some types of vaccines from the WHO vaccination schedule, consumption of cigarette and alcohol, and the HLS-EU scale

3.3 Data Analysis

Figures for frequency, percentage, mean, standard deviation and descriptive statistics will be used. Exploratory factor analysis will be used to ascertain the factor structure of the study's question groups. The internal consistency of the dimensions will be examined using SPSS.

3.4 Questionnaire Design and Variable Selection

The distribution of **393** questionnaires online was purposely distributed to assess the effects of health literacy on vaccination in nursing students in Cyprus International University. The questionnaire consisted of 77 questions in two sections; the first section of the comprised of 30 questions, concerning the socio-demographic, as well as, the vaccination history of nursing students in Cyprus International University. They represent the independent variable and include; ages, genders, academic years, countries, financial statuses, marital statuses, family types, educational levels of their parents, chronic illnesses, if any, contraction of COVID-19, if any and the type of COVID-19 vaccine received, a collection of some types of vaccines from the WHO vaccine schedule, and, the consumption of cigarette and alcohol.

The second section consisted of 47 questions adapted from the European Health Literacy Survey Questionnaire (HLS-EU-Q) to assess the effects of health literacy on vaccination in nursing students.

The combined responses to the 47 questions represented the dependent variable "Effects of health literacy on vaccination in nursing students". The participants (nursing students) rated their level of health literacy on the five-point Health Literacy scale, with scores one through five, indicating 1=Very Difficult, 2=Difficult, 3=Easy, 4=Very Easy and 5=Don't Know. The questions include the ease they have in accessing, understanding, appraising, applying, disease prevention and health promotion whether they find it very difficult to not knowing about their level of health literacy.

The responses option 1=Very Difficult were considered to have low health literacy levels, 2=Difficult were considered to be having moderate levels of health literacy, option 3=Easy implies that the health literacy level is above average, the responses options 4=Very Easy showed high health literacy levels while option 5=Don't Know were considered to have no knowledge of their health literacy levels.

The questionnaire was online and distributed to all targeted nursing students from Cyprus International University, after getting their consent through the informed consent form. The questionnaires were distributed within the periods of 22nd of May to the 22nd of June, 2022. Only 393 participants accepted to participate in the survey and filled out the questionnaire. At the data collection cut-off date, 393 questionnaires were collected with 381 being usable for the study. Just 12 of the questionnaires were rejected because of their incompleteness, making it 96.95% response rate and therefore acceptable for the study. The content of the health literacy level was based on questions 31 to 77 was based on the European Health Literacy Survey Questionnaire (HLS-EU-Q).

The European Health Literacy Survey (HLS-EU) aims to measure and compare health literacy of populations in selected countries in Europe (HLS-EU Consortium, 2008). The HLS-EU Consortium of nine research institutes from Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain, developed the European Health Literacy Survey Questionnaire (HLS-EU-Q). It encompasses the principles presented by Pleasant and colleagues and shows the primarily dimensions of health literacy as mentioned in the definition and conceptual model

proposed by Sorensen et a1. (Sorensen et al.,2012).

3.5 Ethical Issues

The participants were informed of the purpose of the questionnaire, ensured confidentiality of their responses. A completed questionnaire was seen as informed consent to the survey participation.

Concise information on the instruction including volunteer anonymity and purpose of the questionnaire were clearly written at the top of the very first page to guide the participants; everything was written in English and Turkish language since the study was carried out between both English and Turkish speakers.

Ethical Committee Number EKK21-22/017/005 dated 30.05.2022

3.6 Statistical Analysis

Statistics Package Software for Social Science (SPSS), version 1.0.0.1439 2020 IBM SPSS was used to analyze the raw, entered and coded data, presented by descriptive statistics in the form of percentages and frequencies.

3.7 Hypothesis

The hypothesis of this research is that of health literacy (HL) plays a significant role in how information about vaccines and vaccination schedules are acquired and understood, the attitude towards vaccination, the intention to get vaccinated, as well as the practice of vaccination within nursing students.

H1: Nursing students' health literacy level affect their vaccination status.

H0: Nursing students' health literacy level does not affect their vaccination status.

3.8 Methods Used

The differences in the demographic variable of the nursing students were analyzed by descriptive statistics, frequency, crosstabs, and elimination.

The reliability testing or internal consistency of the 47 questions representing the health literacy levels were assessed by Cronbach's Alpha coefficient technique. Testing of hypothesis was computed using SPSS.

CHAPTER 4

RESULTS AND ANALYSIS

4.1 Questionnaire responses

The questionnaire yielded a total of 393 responses, 149 of which were of Turkish Cypriot descent. International nursing students comprised the remaining 244 survey respondents.

4.2 Students' responses

Table 1 shows the responses of students. Almost 60% of the responses from international students were from Nigeria. A little over 6% from Zimbabwe, 8.2% each from Liberia and Sierra Leone and the others from other countries were about 18.9%. Finally, Turkish Cypriot students who were originally placed on a different response percentage.

Table 1: Students' responses

Country	Frequency	Percentage
Turkish Cypriot	149	100%
Nigerian	143	58.6%
Zimbabwe	15	6.1%
Liberia	20	8.2%
Sierra Leone	20	8.2%
Others	46	18.9%
Total	393	

4.3 Data analysis

4.3.1 Socio-demographic characteristics of Students

Error! Reference source not found. provides a breakdown of the respondents' ages, genders, academic years, and financial situations, in addition to other demographic information that is

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relevant to the study. 56% of those who participated are between the ages of 21 and 23, whilst 29% are between the ages of 18 and 20. Approximately 68% of those who participated in the survey are in either their first or second year of education. It is abundantly clear that the vast majority of respondents live in households in which expenditures exceed income.

In respect to the International Students, 32% of those who participated are between the ages of 18 and 20, whilst 25% are between the ages of 21 and 23. Approximately 71% of those who participated in the survey are in either their first or second year of education. It is abundantly clear that the vast majority of respondents live in households in which expenditures exceed income.

Table 2: Socio-demographic characteristics of Students

		Turkish		International		Total	
		N	%	N	%	N	%
Age	Under 18	1	0.7	22	9.0	23	9.7
	Between 18-20	43	28.9	78	32.0	121	60.9
	Between 21-23	83	55.7	60	24.6	143	80.3
	Between 24-25	14	9.4	38	15.6	52	25
	Above 25	8	5.4	46	18.9	54	24.3
Gender	Male	79	53	59	24.2	138	77.2
	Female	70	47	185	75.8	255	122.8
Academic Year	First Year	53	35.6	106	43.4	159	79
	Second Year	48	32.2	68	27.6	116	59.8
	Third Year	23	15.4	37	15.2	60	30.6
	Fourth Year	25	16.8	33	13.5	58	30.3
Financial Status	Income equals expenses	47	31.5	64	26.2	111	57.7

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	Income is more than expenses	22	14.8	32	13.1	54	27.9
	Income is less than expenses	80	53.7	148	60.7	228	114.4

4.3.1 Vaccination Responses

The next step is to evaluate the responses to the vaccination information. **Error! Reference source not found.** displays the frequency distribution of the responses. Except for the Covid-19 and Tetanus vaccines, which have received a high vaccination response, the other vaccines appear to have received fewer positive responses. The scale assigned to the variables as they were employed in SPSS computations is additional essential information introduced in **Error! Reference source not found.**.

Table 4: Student's responses to vaccination

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		International students		Turkish students	
		N	%	N	%
Have you contracted Covid-19 before?	Yes	25	10.2	59	39.6
	No	219	89.8	90	60.4
Have you received the Covid-19 vaccine before?	Yes	189	77.5	142	95.3
	No	53	21.7	5	3.4
What vaccine were you given?	Pfizer -1-2-3-4-5	19	7.8	2	1.3

	Biontech (Comirnaty) 1-2-3-4-5	17	7.0	116	77.9
	Johnson & Johnson-1-2-3-4-5	35	14.3	4	2.7
	AstraZeneca 1-2-3-4-5	38	15.6	2	1.3
	Moderna 1-2-3-4-5	19	7.8	0	0
	Coronavac (Sinovac) 1-2-3-4-5	67	27.5	22	14.8
	Turkovac 1-2-3-4-5	19	7.8	0	0
Have you received the influenza vaccine?	No	133	54.5	71	47.7
	Yes –last 1 year	8	3.3	13	8.7
	Yes –last 5 year	11	4.5	21	14.1
	I don't know	91	37.3	43	28.9
	No	95	38.9	28	18.8

Have you received the Tetanus, diphtheria, pertussis (Tdap or Td) vaccine?	Yes - last 10 years	69	28.3	76	51.0
	I don't know	80	32.8	43	28.9
Have you received the Varicella (VAR) vaccine?	No	133	54.5	66	44.3
	Yes - 1 dose	10	4.1	2	1.3
	Yes - 2 dose	9	3.7	1	0.7
	I don't know	90	36.9	79	53.0
Have you received the cervix cancer vaccine (Human papillomavirus: HPV)?	No	181	74.2	106	71.1
	Yes - 1 dose	4	1.6	2	1.3
	Yes - 2 dose	4	1.6	1	0.7
	Yes - 3 dose	55	22.5	1	0.7
	I don't know	181	74.2	38	25.5
Have you received the Pneumococcal (PCV15, PCV20, PPSV23) vaccine?	No	146	59.8	65	43.6
	Yes	14	5.7	13	8.7
	I don't know	82	33.6	70	47.0
Have you received the Hepatitis A (HepA) vaccine?	No	155	63.5	44	29.5
	Yes - 1 dose	11	4.5	36	24.2

	Yes - 2 dose	7	2.9	4	2.7	**????**
	I don't know	70	28.7	64	43.0	
Have you received the Hepatitis B (HepB) vaccine?	No	140	57.4	42	28.2	
	Yes - 1 dose	13	5.3	21	14.1	
	Yes - 2 dose	10	4.1	13	8.7	
	Yes - 3 dose	14	5.7	9	6.0	
	I don't know	67	27.5	63	42.3	
Have you received the Meningococcal A vaccine?	No	153	62.7	60	40.3	
	Yes	11	4.5	2	1.3	
	I don't know	79	32.4	85	57.0	

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4.3 Breakdown of students' responses to vaccination

With the primary objective of this thesis being the evaluation of nursing students' health literacy in relation to vaccination, it is necessary to categorize the students' responses in relation to vaccination. The table below provides a clear breakdown of the replies received from nursing students at different academic levels.

The majority of respondents chose the "I don't know" option, indicating that the majority of students across all academic levels appear to lack proper knowledge of the aforementioned common vaccinations.

Total number of students are represented as N

Table 4: Turkish and International Students vaccination responses based on Age

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Age		Under 18	18 – 20	21 – 23	24 – 25	Above 25	P-value
		N	N	N	N	N	
Have you contracted Covid-19 before?	Yes	2	25	38	11	8	0.201
	No	21	98	106	41	47	
Have you received the Covid-19 vaccine before?	Yes	13	99	130	44	47	0.001
	No	10	20	14	8	7	
Have you received the influenza vaccine?	No	12	57	74	34	27	0.192
	Yes- last 1 year	0	6	11	2	2	
	Yes- last 5 years	0	8	15	4	5	
	I don't know	11	49	44	12	21	
Have you received the Tetanus, and diphtheria vaccine?	No	7	43	39	23	13	0.348
	Yes-last 10 years	7	39	62	15	22	
	I don't know	9	39	42	14	20	
Have you received the Varicella (VAR) vaccine?	No	16	65	68	33	19	0.019
	Yes - 1 dose	1	2	3	1	5	
	Yes - 2 doses	0	2	2	3	3	
	I don't know	6	51	71	15	27	
Have you received the cervix cancer vaccine (Human papillomavirus: HPV)?	No	17	87	103	44	38	0.346
	Yes - 1 dose	0	1	1	1	3	
	Yes - 2 doses	0	1	1	1	2	
	Yes - 3 doses	6	18	18	3	12	
	I don't know	0	14	21	3	0	
	No	14	66	68	35	30	0.097

Have you received the Pneumococcal (PCV15, PCV20, PPSV23) vaccine?	Yes	1	4	12	5	5	
	I don't know	8	51	64	12	18	
Have you received the Hepatitis A (HepA) vaccine?	No	15	63	57	34	32	0.007
	Yes - 1 dose	0	7	25	9	6	
	Yes - 2 doses	0	3	5	1	2	
	I don't know	8	47	57	8	15	
Have you received the Hepatitis B (HepB) vaccine?	No	15	61	56	29	23	0.070
	Yes - 1 dose	0	6	13	8	7	
	Yes - 2 doses	0	4	13	1	5	
	Yes - 3 doses	1	2	8	6	6	
	I don't know	7	48	54	8	14	
Have you received the Meningococcal A vaccine?	No	16	63	67	36	32	0.007
	Yes	1	3	3	2	6	
	I don't know	5	55	74	14	17	
Have you received the Meningococcal B vaccine?	No	16	63	66	37	31	0.008
	Yes	1	3	3	1	4	
	I don't know	6	54	75	14	19	

Table 5: Turkish and International Students vaccination responses based on Gender

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Gender		Male	Female	P-value
		N	N	
	Yes	40	44	0.006

Have you contracted Covid-19 before?	No	99	214	
Have you received the Covid-19 vaccine before?	Yes	123	210	0.088
	No	15	44	
Have you received the influenza vaccine?	No	73	131	0.573
	Yes- last 1 year	9	12	
	Yes- last 5 years	13	19	
	I don't know	44	93	
Have you received the Tetanus, and diphtheria vaccine?	No	48	77	0.070
	Yes-last 10 years	56	89	
	I don't know	34	90	
Have you received the Varicella (VAR) vaccine?	No	75	126	0.559
	Yes - 1 dose	4	8	
	Yes - 2 doses	1	9	
	I don't know	59	111	
Have you received the cervix cancer vaccine (Human papillomavirus: HPV)?	No	107	182	0.404
	Yes - 1 dose	0	6	
	Yes - 2 dose	1	4	
	Yes - 3 dose	14	43	
	I don't know	17	21	

Have you received the Pneumococcal (PCV15, PCV20, PPSV23) vaccine?	No	71	142	0.412
	Yes	11	16	
	I don't know	57	96	
Have you received the Hepatitis A (HepA) vaccine?	No	64	137	0.183
	Yes - 1 dose	19	28	
	Yes - 2 dose	4	7	
	I don't know	52	83	
Have you received the Hepatitis B (HepB) vaccine?	No	62	122	0.691
	Yes - 1 dose	17	17	
	Yes - 2 dose	5	18	
	Yes - 3 dose	7	16	
	I don't know	48	83	
Have you received the Meningococcal A vaccine?	No	70	144	0.224
	Yes	5	10	
	I don't know	64	101	
Have you received the Meningococcal B vaccine?	No	71	142	0.362
	Yes	2	10	
	I don't know	64	104	

Table 6: Turkish and International Students vaccination responses based on Academic Year

Commented [EMC6]: where are the comparison statistics p ?

Academic year		First year	Second year	Third year	Fourth year	P-value
		N	N	N	N	
Have you contracted Covid-19 before?	Yes	25	32	14	13	0.109
	No	134	84	46	45	
Have you received the Covid-19 vaccine before?	Yes	129	102	51	49	0.591
	No	27	13	9	9	
Have you received the influenza vaccine?	No	91	50	31	32	0.209
	Yes- last 1 year	7	8	5	1	
	Yes- last 5 years	8	9	9	6	
	I don't know	52	48	15	19	
Have you received the Tetanus, and diphtheria vaccine?	No	57	36	21	10	0.224
	Yes-last 10 years	51	41	23	29	
	I don't know	50	38	16	19	
Have you received the Varicella (VAR) vaccine?	No	90	59	31	19	0.010
	Yes - 1 dose	5	1	4	2	
	Yes - 2 doses	2	1	4	3	
	I don't know	59	55	21	34	
Have you received the cervix cancer vaccine (Human papillomavirus: HPV)?	No	118	84	43	42	0.950
	Yes - 1 dose	0	1	3	2	
	Yes - 2 dose	1	0	3	1	
	Yes - 3 dose	23	16	8	9	
	I don't know	98	67	28	26	
	No	98	56	31	25	0.078

Have you received the Pneumococcal (PCV15, PCV20, PPSV23) vaccine?	Yes	2	11	9	5	
	I don't know	57	49	19	27	
Have you received the Hepatitis A (HepA) vaccine?	No	95	56	26	22	0.100
	Yes - 1 dose	11	17	8	11	
	Yes - 2 dose	0	2	6	3	
	I don't know	52	40	20	22	
Have you received the Hepatitis B (HepB) vaccine?	No	91	56	20	15	0.009
	Yes - 1 dose	10	11	6	7	
	Yes - 2 dose	4	4	7	8	
	Yes - 3 dose	3	6	5	9	
	I don't know	50	39	22	19	
Have you received the Meningococcal A vaccine?	No	98	60	27	27	0.124
	Yes	2	4	5	4	
	I don't know	58	51	28	27	
Have you received the Meningococcal B vaccine?	No	52	28	22	18	0.044
	Yes	0	4	0	0	
	I don't know	50	64	24	32	

Table 7: Turkish and International Students vaccination responses based on Financial status

Commented [EMC7]: where are the comparison statistics p ?

Financial status		Income equals expenses	Income is more than expenses	Income is less than expenses	P-value
		N	N	N	
Have you contracted Covid-19 before?	Yes	24	14	46	0.659
	No	87	41	185	

Have you received the Covid-19 vaccine before?	Yes	92	51	190	0.221
	No	18	4	37	
Have you received the influenza vaccine?	No	61	20	123	0.070
	Yes- last 1 year	4	5	12	
	Yes- last 5 years	10	5	17	
	I don't know	35	25	77	
Have you received the Tetanus, and diphtheria vaccine?	No	36	20	69	0.618
	Yes-last 10 years	45	17	83	
	I don't know	30	18	76	
Have you received the Varicella (VAR) vaccine?	No	63	24	114	0.256
	Yes - 1 dose	3	2	7	
	Yes - 2 doses	3	2	5	
	I don't know	41	26	103	
Have you received the cervix cancer vaccine (Human papillomavirus: HPV)?	No	82	36	171	0.231
	Yes - 1 dose	1	0	5	
	Yes - 2 dose	2	1	2	
	Yes - 3 dose	14	8	35	
	I don't know	12	10	16	
Have you received the Pneumococcal (PCV15, PCV20, PPSV23) vaccine?	No	62	29	122	0.867
	Yes	7	6	14	
	I don't know	41	20	92	
Have you received the Hepatitis A (HepA) vaccine?	No	59	25	117	0.885
	Yes - 1 dose	9	11	27	
	Yes - 2 dose	2	0	9	

	I don't know	40	19	76	
Have you received the Hepatitis B (HepB) vaccine?	No	54	22	108	0.775
	Yes - 1 dose	3	7	24	
	Yes - 2 dose	7	5	11	
	Yes - 3 dose	6	3	14	
	I don't know	41	18	72	
Have you received the Meningococcal A vaccine?	No	63	27	124	0.792
	Yes	3	3	9	
	I don't know	45	24	96	
Have you received the Meningococcal B vaccine?	No	63	28	122	0.859
	Yes	2	2	8	
	I don't know	46	24	98	

4.4 Students Health Literacy Scale responses

With the primary objective of this thesis being the evaluation of nursing students' health literacy in relation to vaccination, it is also necessary to categorize the students' responses based on the health literacy scale. The table below provides a clear breakdown of the replies received from nursing students at different academic levels.

Table 8: Turkish and International Students Health Literacy Scale responses based on Age

Commented [EMC8]:

Age		Under 18	18 – 20	21 – 23	24 – 25	Above 25
Find information about symptoms of illnesses that concern you?	Very Difficult	0	6	8	1	2
	Difficult	4	11	15	3	4

	Easy	14	77	96	30	32
	Very Easy	1	12	12	9	10
	Don't know	4	15	13	8	7
Find information on treatments of illnesses that concern you?	Very Difficult	0	5	3	0	3
	Difficult	4	15	28	7	6
	Easy	15	75	89	31	36
	Very Easy	1	10	11	7	7
	Don't know	3	16	13	6	3
Find out what to do in case of a medical emergency?	Very Difficult	0	4	4	2	3
	Difficult	6	21	31	6	9
	Easy	12	76	85	28	35
	Very Easy	1	10	13	6	3
	Don't know	3	11	11	8	5
Find out where to get professional help when you are ill?	Very Difficult	2	5	5	0	2
	Difficult	7	15	19	6	9
	Easy	13	76	85	34	31
	Very Easy	1	14	25	8	8
	Don't know	0	12	9	0	5
Understand what your doctor says to you?	Very Difficult	1	5	7	0	0
	Difficult	3	15	8	2	4
	Easy	18	82	104	32	38

	Very Easy	0	14	18	13	11
	Don't know	1	6	7	2	2
Understand the leaflets that come with your medicine?	Very Difficult	1	5	9	1	3
	Difficult	10	24	19	6	12
	Easy	7	65	82	27	29
	Very Easy	0	17	24	8	7
	Don't know	5	11	10	6	4
Understand what to do in a medical emergency?	Very Difficult	1	2	5	1	4
	Difficult	7	27	32	9	13
	Easy	11	58	82	27	28
	Very Easy	1	11	9	7	8
	Don't know	3	23	16	4	2
Understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?	Very Difficult	0	2	4	1	1
	Difficult	2	8	13	3	2
	Easy	19	79	94	29	36
	Very Easy	1	27	26	14	13
	Don't know	1	5	7	2	3
Judge how information from your doctor applies to you?	Very Difficult	1	4	1	1	2
	Difficult	4	10	23	3	7
	Easy	15	76	92	35	34
	Very Easy	1	14	9	5	6

	Don't know	2	17	19	5	6
Judge the advantages and disadvantages of different treatment options?	Very Difficult	1	3	4	0	2
	Difficult	3	16	21	8	11
	Easy	15	73	93	28	33
	Very Easy	1	11	10	7	5
	Don't know	3	18	16	5	4
Judge when you may need to get a second opinion from another doctor?	Very Difficult	1	2	5	1	2
	Difficult	4	20	26	6	14
	Easy	11	67	82	30	29
	Very Easy	4	12	11	6	3
	Don't know	3	20	19	5	7
Judge if the information about illness in the media is reliable?	Very Difficult	1	10	12	0	4
	Difficult	4	27	36	11	18
	Easy	13	58	68	23	17
	Very Easy	3	10	5	8	6
	Don't know	2	16	22	6	10
Use information the doctor gives you to make decisions about your illness?	Very Difficult	1	1	2	0	3
	Difficult	3	13	19	5	4
	Easy	15	76	100	30	41
	Very Easy	1	14	9	9	4
	Don't know	3	13	11	4	3

Follow the instructions on medication?	Very Difficult	1	0	3	1	2
	Difficult	1	6	12	3	2
	Easy	19	83	102	27	35
	Very Easy	1	24	20	17	14
	Don't know	1	8	5	1	2
Call an ambulance in an emergency?	Very Difficult	1	3	8	1	5
	Difficult	4	10	13	8	9
	Easy	12	73	85	24	26
	Very Easy	1	18	23	12	9
	Don't know	4	17	12	3	6
Follow instructions from your doctor or pharmacist?	Very Difficult	1	0	4	0	0
	Difficult	1	6	8	2	1
	Easy	18	89	101	32	43
	Very Easy	1	21	22	13	10
	Don't know	2	5	5	1	0
Find information about how to manage unhealthy behavior such as smoking, low physical activity and drinking too much?	Very Difficult	2	1	5	0	1
	Difficult	2	7	12	6	6
	Easy	14	77	86	30	31
	Very Easy	3	25	23	10	12
	Don't know	2	11	13	2	3
	Very Difficult	0	9	10	4	1

Find information on how to manage mental health problems like stress or depression?	Difficult	8	18	33	8	14
	Easy	11	66	76	26	33
	Very Easy	2	16	14	7	5
	Don't know	2	11	8	3	2
Find information about vaccinations and health screenings that you should have?	Very Difficult	1	3	4	0	1
	Difficult	6	16	23	9	15
	Easy	13	72	91	30	30
	Very Easy	1	11	13	5	7
	Don't know	2	18	9	4	2
Find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?	Very Difficult	0	2	6	1	0
	Difficult	3	17	18	8	15
	Easy	16	67	97	27	28
	Very Easy	2	18	13	8	8
	Don't know	2	16	7	4	4
Understand health warnings about behavior such as smoking, low physical activity and drinking too much?	Very Difficult	0	3	4	0	0
	Difficult	2	7	8	5	6
	Easy	13	73	105	27	34
	Very Easy	4	26	17	13	14
	Don't know	4	11	7	1	1
Understand why you need vaccinations?	Very Difficult	1	1	4	1	0
	Difficult	0	16	10	5	4

	Easy	19	71	95	24	34
	Very Easy	3	23	25	15	14
	Don't know	0	10	7	2	3
Understand why you need health screenings?	Very Difficult	1	2	4	1	0
	Difficult	1	10	8	3	4
	Easy	14	80	99	27	34
	Very Easy	4	15	24	13	14
	Don't know	3	13	7	3	3
Judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?	Very Difficult	0	3	5	0	0
	Difficult	1	8	8	1	4
	Easy	15	78	95	31	37
	Very Easy	4	17	24	10	10
	Don't know	3	14	9	3	3
Judge when you need to go to a doctor for a check-up?	Very Difficult	1	2	3	0	0
	Difficult	4	20	22	9	14
	Easy	16	69	89	22	29
	Very Easy	2	16	15	14	10
	Don't know	0	14	12	2	2
Judge which vaccinations you may need?	Very Difficult	1	3	6	0	2
	Difficult	4	29	29	12	21
	Easy	14	56	76	23	25

	Very Easy	2	10	12	7	3
	Don't know	1	23	19	5	4
Judge which health screenings you should have?	Very Difficult	0	2	6	1	1
	Difficult	4	22	26	9	24
	Easy	17	62	82	24	22
	Very Easy	0	11	11	9	5
	Don't know	1	22	17	4	3
Judge if the information on health risks in the media is reliable?	Very Difficult	0	7	11	0	1
	Difficult	6	27	23	9	17
	Easy	12	54	78	26	24
	Very Easy	1	12	11	7	5
	Don't know	2	20	18	5	8
Decide if you should have a flu vaccination?	Very Difficult	1	2	5	0	0
	Difficult	6	23	21	10	19
	Easy	12	59	83	24	23
	Very Easy	0	11	11	7	6
	Don't know	3	22	22	6	7
Decide how you can protect yourself from illness based on advice from family and friends?	Very Difficult	0	4	2	0	1
	Difficult	3	15	20	7	9
	Easy	15	66	95	30	30
	Very Easy	1	18	18	8	11

	Don't know	3	14	7	2	4
Decide how you can protect yourself from illness based on information in the media?	Very Difficult	0	3	7	0	0
	Difficult	2	18	22	12	8
	Easy	16	67	92	28	38
	Very Easy	0	14	12	4	6
	Don't know	4	16	8	3	3
Find information on healthy activities such as exercise, healthy food and nutrition?	Very Difficult	0	2	3	0	0
	Difficult	2	9	10	4	3
	Easy	17	69	101	29	36
	Very Easy	2	22	22	11	12
	Don't know	1	13	6	3	4
Find out about activities that are good for your mental well-being?	Very Difficult	0	7	4	1	0
	Difficult	2	15	17	7	9
	Easy	19	70	92	29	31
	Very Easy	0	14	20	7	11
	Don't know	1	12	9	3	4
Find information on how your neighborhood could be more health-friendly?	Very Difficult	2	4	5	1	0
	Difficult	5	17	17	9	15
	Easy	12	64	95	25	26
	Very Easy	1	13	16	8	8
	Don't know	2	15	9	4	6

Find out about political changes that may affect health?	Very Difficult	2	4	6	1	1
	Difficult	5	27	22	12	20
	Easy	10	52	86	22	22
	Very Easy	0	15	12	7	5
	Don't know	5	17	15	5	7
Find out about efforts to promote your health at work?	Very Difficult	1	3	5	0	0
	Difficult	4	13	14	10	11
	Easy	14	69	96	26	33
	Very Easy	1	15	14	7	6
	Don't know	2	16	12	4	5
Understand advice on health from family members or friends?	Very Difficult	0	1	2	0	0
	Difficult	0	12	6	6	7
	Easy	19	82	112	28	36
	Very Easy	2	12	11	8	8
	Don't know	1	8	10	4	4
Understand information on food packaging?	Very Difficult	0	3	5	0	0
	Difficult	3	17	16	7	16
	Easy	17	69	94	30	30
	Very Easy	2	17	17	8	7
	Don't know	0	10	9	2	2
Understand information in the media on how to get healthier?	Very Difficult	0	1	4	0	0

	Difficult	2	16	13	4	9
	Easy	19	69	94	32	35
	Very Easy	1	19	19	9	6
	Don't know	0	10	9	2	5
Understand information on how to keep your mind healthy?	Very Difficult	0	3	3	2	2
	Difficult	0	11	15	7	7
	Easy	21	74	103	30	36
	Very Easy	0	14	10	6	8
	Don't know	1	14	9	2	2
Judge where your life affects your health and wellbeing?	Very Difficult	0	4	6	0	2
	Difficult	3	15	13	5	11
	Easy	17	69	96	31	32
	Very Easy	1	11	17	9	8
	Don't know	1	15	8	2	2
Judge how your housing conditions help you to stay healthy?	Very Difficult	0	3	2	1	1
	Difficult	2	16	13	4	6
	Easy	18	66	102	31	34
	Very Easy	1	16	16	10	11
	Don't know	1	13	8	1	3
Judge which everyday behavior is related to your health?	Very Difficult	0	4	2	0	1
	Difficult	5	11	12	4	10

	Easy	14	65	104	28	29
	Very Easy	2	19	13	11	9
	Don't know	1	16	9	4	6
Make decisions to improve your health?	Very Difficult	1	2	2	0	1
	Difficult	2	12	15	7	8
	Easy	17	72	95	28	32
	Very Easy	2	22	21	11	12
	Don't know	0	7	8	1	2
Join a sports club or exercise class if you want to?	Very Difficult	1	8	8	2	6
	Difficult	5	16	13	8	13
	Easy	14	65	95	26	26
	Very Easy	1	16	13	9	6
	Don't know	1	11	12	2	4
Influence your living conditions that affect your health and wellbeing?	Very Difficult	0	5	4	0	3
	Difficult	4	15	13	6	12
	Easy	15	66	99	30	31
	Very Easy	0	20	14	7	6
	Don't know	3	11	11	3	3
Take part in activities that improve health and well-being in your community?	Very Difficult	1	4	4	1	3
	Difficult	5	16	18	7	16
	Easy	15	69	90	31	24

	Very Easy	0	16	16	6	8
	Don’t know	1	11	12	2	4

NO NEEED THIS TYPE TABLE

EVERY STUDENT HAS AN AVERAGE SCORE WHEN USING A SCALE.

WE WILL COMPARE THESE AVERAGE SCORES.

ALSO THE SCALE HAS SUB-GROUPS.

YOU WILL WRITE THIS IN THE MATERIAL METHOD

YOU WILL ALSO ADD TO THE FINDINGS

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4668324/

Scale calculation

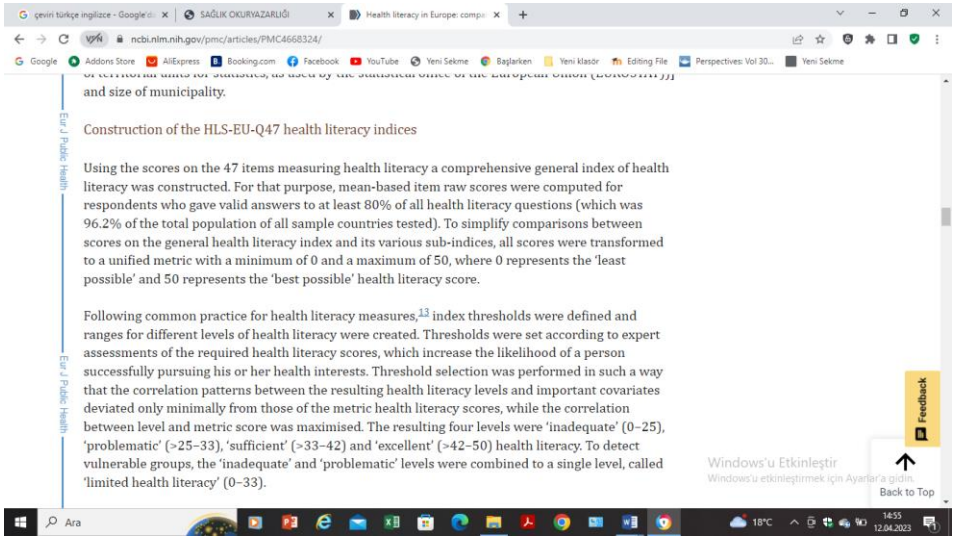

Table 10: Turkish and International Students Health Literacy Scale responses based on Gender

Gender		Male	Female
Find information about symptoms of illnesses that concern you?	Very Difficult	4	13
	Difficult	18	19
	Easy	97	152
	Very Easy	8	36
	Don't know	11	36
Find information on treatments of illnesses that concern you?	Very Difficult	2	9

	Difficult	25	35
	Easy	91	155
	Very Easy	9	27
	Don't know	11	30
Find out what to do in case of a medical emergency?	Very Difficult	3	10
	Difficult	24	49
	Easy	87	149
	Very Easy	11	22
	Don't know	11	27
Find out where to get professional help when you are ill?	Very Difficult	4	10
	Difficult	16	40
	Easy	90	149
	Very Easy	19	37
	Don't know	7	19
Understand what your doctor says to you?	Very Difficult	5	8
	Difficult	11	21
	Easy	96	178
	Very Easy	19	37
	Don't know	6	12
Understand the leaflets that come with your medicine?	Very Difficult	4	15

	Difficult	29	42
	Easy	78	132
	Very Easy	16	40
	Don't know	9	27
Understand what to do in a medical emergency?	Very Difficult	3	10
	Difficult	36	52
	Easy	77	129
	Very Easy	9	27
	Don't know	11	37
Understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?	Very Difficult	4	4
	Difficult	10	18
	Easy	94	163
	Very Easy	23	58
	Don't know	5	13
Judge how information from your doctor applies to you?	Very Difficult	2	7
	Difficult	16	31
	Easy	94	158
	Very Easy	10	25
	Don't know	15	34
	Very Difficult	3	7

Judge the advantages and disadvantages of different treatment options?	Difficult	21	38
	Easy	91	151
	Very Easy	10	24
	Don't know	11	35
Judge when you may need to get a second opinion from another doctor?	Very Difficult	4	7
	Difficult	27	43
	Easy	80	139
	Very Easy	10	26
	Don't know	15	39
Judge if the information about illness in the media is reliable?	Very Difficult	11	16
	Difficult	35	61
	Easy	67	112
	Very Easy	9	23
	Don't know	12	44
Use information the doctor gives you to make decisions about your illness?	Very Difficult	1	6
	Difficult	19	25
	Easy	96	166
	Very Easy	7	30
	Don't know	11	23
Follow the instructions on medication?	Very Difficult	2	5

	Difficult	12	12
	Easy	99	167
	Very Easy	15	61
	Don't know	7	10
Call an ambulance in an emergency?	Very Difficult	6	12
	Difficult	16	28
	Easy	77	143
	Very Easy	22	41
	Don't know	13	29
Follow instructions from your doctor or pharmacist?	Very Difficult	3	2
	Difficult	5	13
	Easy	103	180
	Very Easy	14	53
	Don't know	7	6
Find information about how to manage unhealthy behavior such as smoking, low physical activity and drinking too much?	Very Difficult	4	5
	Difficult	11	22
	Easy	82	156
	Very Easy	25	48
	Don't know	8	23
Find information on how to manage mental health	Very Difficult	10	14

problems like stress or depression?	Difficult	23	58
	Easy	82	130
	Very Easy	13	31
	Don't know	7	19
Find information about vaccinations and health screenings that you should have?	Very Difficult	3	6
	Difficult	23	46
	Easy	90	146
	Very Easy	9	28
	Don't know	9	26
Find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?	Very Difficult	3	6
	Difficult	20	41
	Easy	89	146
	Very Easy	11	38
	Don't know	11	22
Understand health warnings about behavior such as smoking, low physical activity and drinking too much?	Very Difficult	2	5
	Difficult	9	19
	Easy	87	165
	Very Easy	27	47
	Don't know	10	14
Understand why you need vaccinations?	Very Difficult	2	5

	Difficult	12	23
	Easy	83	160
	Very Easy	30	50
	Don't know	8	14
Understand why you need health screenings?	Very Difficult	3	5
	Difficult	11	15
	Easy	89	165
	Very Easy	22	48
	Don't know	9	20
Judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?	Very Difficult	4	4
	Difficult	7	15
	Easy	96	160
	Very Easy	20	45
	Don't know	7	25
Judge when you need to go to a doctor for a check-up?	Very Difficult	2	4
	Difficult	26	43
	Easy	80	145
	Very Easy	17	40
	Don't know	10	20
Judge which vaccinations you may need?	Very Difficult	5	7

	Difficult	32	63
	Easy	74	120
	Very Easy	10	24
	Don't know	14	38
Judge which health screenings you should have?	Very Difficult	2	8
	Difficult	30	55
	Easy	75	132
	Very Easy	12	24
	Don't know	15	32
Judge if the information on health risks in the media is reliable?	Very Difficult	11	8
	Difficult	25	57
	Easy	75	119
	Very Easy	11	25
	Don't know	12	41
Decide if you should have a flu vaccination?	Very Difficult		5
	Difficult	3	49
	Easy	73	128
	Very Easy	13	22
	Don't know	15	45
Decide how you can protect yourself from illness based on	3		4

advice from family and friends?	Difficult	19	35
	Easy	89	147
	Very Easy	18	38
	Don’t know	5	25
Decide how you can protect yourself from illness based on information in the media?	Very Difficult	5	5
	Difficult	18	44
	Easy	93	148
	Very Easy	9	27
	Don’t know	7	27
Find information on healthy activities such as exercise, healthy food and nutrition?	Very Difficult	2	3
	Difficult	13	15
	Easy	94	158
	Very Easy	18	51
	Don’t know	6	21
Find out about activities that are good for your mental well-being?	Very Difficult	4	8
	Difficult	18	32
	Easy	88	153
	Very Easy	17	35
	Don’t know	7	22
	Very Difficult	6	6

Find information on how your neighborhood could be more health-friendly?	Difficult	20	43
	Easy	85	137
	Very Easy	14	32
	Don’t know	8	28
Find out about political changes that may affect health?	Very Difficult	4	10
	Difficult	22	64
	Easy	82	110
	Very Easy	11	28
	Don’t know	13	36
Find out about efforts to promote your health at work?	Very Difficult	2	7
	Difficult	19	33
	Easy	87	151
	Very Easy	13	30
	Don’t know	12	27
Understand advice on health from family members or friends?	Very Difficult	1	2
	Difficult	14	17
	Easy	100	177
	Very Easy	10	31
	Don’t know	7	20
Understand information on food packaging?	Very Difficult	4	4

	Difficult	17	42
	Easy	91	149
	Very Easy	15	36
	Don’t know	6	17
Understand information in the media on how to get healthier?	Very Difficult	2	3
	Difficult	17	27
	Easy	89	160
	Very Easy	17	37
	Don’t know	8	18
Understand information on how to keep your mind healthy?	Very Difficult	5	5
	Difficult	16	24
	Easy	93	171
	Very Easy	11	27
	Don’t know	8	20
Judge where your life affects your health and wellbeing?	Very Difficult	4	8
	Difficult	19	28
	Easy	88	157
	Very Easy	12	34
	Don’t know	8	20
	Very Difficult	2	5

Judge how your housing conditions help you to stay healthy?	Difficult	18	23
	Easy	92	159
	Very Easy	12	42
	Don’t know	8	18
Judge which everyday behavior is related to your health?	Very Difficult	3	4
	Difficult	14	28
	Easy	88	152
	Very Easy	13	41
	Don’t know	13	23
Make decisions to improve your health?	Very Difficult	3	3
	Difficult	13	31
	Easy	92	152
	Very Easy	19	49
	Don’t know	6	12
Join a sports club or exercise class if you want to?	Very Difficult	10	15
	Difficult	16	39
	Easy	83	143
	Very Easy	15	30
	Don’t know	9	21
	Very Difficult	4	8

Influence your living conditions that affect your health and wellbeing?	Difficult	23	27
	Easy	84	157
	Very Easy	11	36
	Don't know	11	20
Take part in activities that improve health and well-being in your community?	Very Difficult	4	9
	Difficult	23	39
	Easy	87	142
	Very Easy	10	36
	Don't know	9	21

Table 11: Turkish and International Students Health Literacy Scale responses based on Academic Year

Academic year		First year	Second year	Third year	Fourth year
Find information about symptoms of illnesses that concern you?	Very Difficult	8	6	3	0
	Difficult	14	14	3	6
	Easy	95	75	40	39
	Very Easy	16	10	8	10
	Don't know	26	11	7	3
Find information on treatments of illnesses that concern you?	Very Difficult	6	3	2	0
	Difficult	28	15	10	7

	Easy	91	76	38	41
	Very Easy	13	9	7	7
	Don't know	21	13	4	3
Find out what to do in case of a medical emergency?	Very Difficult	5	5	2	1
	Difficult	29	27	7	10
	Easy	89	63	41	43
	Very Easy	13	11	6	3
	Don't know	22	10	5	1
Find out where to get professional help when you are ill?	Very Difficult	7	5	2	0
	Difficult	27	17	7	5
	Easy	90	69	37	43
	Very Easy	18	16	12	10
	Don't know	16	7	3	0
Understand what your doctor says to you?	Very Difficult	7	3	3	0
	Difficult	20	6	3	3
	Easy	101	86	42	45
	Very Easy	18	17	12	9
	Don't know	13	3	1	1
Understand the leaflets that come with your medicine?	Very Difficult	9	4	4	2
	Difficult	34	23	8	6

	Easy	82	52	36	40
	Very Easy	19	18	10	9
	Don't know	15	17	3	1
Understand what to do in a medical emergency?	Very Difficult	5	2	4	2
	Difficult	39	32	5	12
	Easy	71	56	41	38
	Very Easy	11	11	9	5
	Don't know	32	13	2	1
Understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?	Very Difficult	4	2	2	0
	Difficult	15	9	4	0
	Easy	96	82	34	45
	Very Easy	33	17	18	13
	Don't know	11	5	2	0
Judge how information from your doctor applies to you?	Very Difficult	4	4	1	0
	Difficult	25	12	7	3
	Easy	90	75	40	47
	Very Easy	13	10	8	4
	Don't know	26	14	5	4
Judge the advantages and disadvantages of different treatment options?	Very Difficult	5	2	3	0
	Difficult	32	14	9	4

	Easy	82	81	33	46
	Very Easy	11	6	11	6
	Don't know	28	12	4	2
Judge when you may need to get a second opinion from another doctor?	Very Difficult	5	2	4	0
	Difficult	27	22	8	13
	Easy	84	64	33	38
	Very Easy	15	9	8	4
	Don't know	27	17	7	3
Judge if the information about illness in the media is reliable?	Very Difficult	13	9	2	3
	Difficult	36	26	13	21
	Easy	69	57	30	23
	Very Easy	12	8	10	2
	Don't know	28	13	6	9
Use information the doctor gives you to make decisions about your illness?	Very Difficult	3	1	1	2
	Difficult	18	13	9	4
	Easy	105	71	40	46
	Very Easy	13	12	9	3
	Don't know	15	15	2	2
Follow the instructions on medication?	Very Difficult	2	1	1	3
	Difficult	8	7	8	1

	Easy	108	78	38	42
	Very Easy	32	20	13	11
	Don't know	8	7	1	1
Call an ambulance in an emergency?	Very Difficult	7	5	2	4
	Difficult	19	14	6	5
	Easy	87	64	34	35
	Very Easy	24	17	14	8
	Don't know	21	12	5	4
Follow instructions from your doctor or pharmacist?	Very Difficult	2	2	1	0
	Difficult	7	6	3	2
	Easy	113	78	45	47
	Very Easy	27	22	11	7
	Don't know	8	4	0	1
Find information about how to manage unhealthy behavior such as smoking, low physical activity and drinking too much?	Very Difficult	7	2	0	0
	Difficult	12	11	7	3
	Easy	91	66	41	40
	Very Easy	29	23	10	11
	Don't know	17	10	3	1
Find information on how to manage mental health problems like stress or depression?	Very Difficult	10	11	3	0
	Difficult	31	20	12	18

	Easy	84	55	38	35
	Very Easy	21	14	6	3
	Don't know	12	11	2	1
Find information about vaccinations and health screenings that you should have?	Very Difficult	5	2	1	1
	Difficult	29	18	8	14
	Easy	85	74	38	39
	Very Easy	17	7	11	2
	Don't know	21	11	2	1
Find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?	Very Difficult	4	3	2	0
	Difficult	29	15	7	10
	Easy	88	65	42	40
	Very Easy	19	16	8	6
	Don't know	17	13	2	1
Understand health warnings about behavior such as smoking, low physical activity and drinking too much?	Very Difficult	4	1	2	0
	Difficult	10	11	3	4
	Easy	98	66	44	44
	Very Easy	31	23	11	9
	Don't know	12	11	1	0
Understand why you need vaccinations?	Very Difficult	4	0	3	0
	Difficult	13	13	4	5

	Easy	95	72	36	40
	Very Easy	28	23	18	11
	Don't know	17	4	0	1
Understand why you need health screenings?	Very Difficult	5	2	1	0
	Difficult	9	7	7	3
	Easy	102	73	35	44
	Very Easy	21	23	17	9
	Don't know	19	8	1	1
Judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?	Very Difficult	4	3	1	0
	Difficult	11	5	4	2
	Easy	101	67	42	46
	Very Easy	24	20	12	9
	Don't know	15	16	1	0
Judge when you need to go to a doctor for a check-up?	Very Difficult	3	2	1	0
	Difficult	31	16	9	13
	Easy	90	64	37	34
	Very Easy	19	19	12	7
	Don't know	14	11	2	3
Judge which vaccinations you may need?	Very Difficult	8	3	1	0
	Difficult	43	23	12	17

	Easy	70	56	37	31
	Very Easy	8	14	8	4
	Don't know	28	16	3	5
Judge which health screenings you should have?	Very Difficult	4	2	1	3
	Difficult	39	19	12	15
	Easy	79	63	33	32
	Very Easy	10	12	10	4
	Don't know	24	16	4	3
Judge if the information on health risks in the media is reliable?	Very Difficult	9	8	1	1
	Difficult	31	23	11	17
	Easy	74	55	34	31
	Very Easy	14	11	8	3
	Don't know	27	15	6	5
Decide if you should have a flu vaccination?	Very Difficult	5	2	1	0
	Difficult	35	18	12	14
	Easy	74	60	34	33
	Very Easy	13	10	8	4
	Don't know	27	22	5	6
Decide how you can protect yourself from illness based on advice from family and friends?	Very Difficult	4	2	0	1
	Difficult	22	13	11	8

	Easy	91	66	37	42
	Very Easy	24	19	9	4
	Don't know	13	12	3	2
Decide how you can protect yourself from illness based on information in the media?	Very Difficult	5	4	1	0
	Difficult	30	14	7	11
	Easy	92	67	39	43
	Very Easy	12	12	10	2
	Don't know	16	15	2	1
Find information on healthy activities such as exercise, healthy food and nutrition?	Very Difficult	2	2	1	0
	Difficult	13	8	5	2
	Easy	99	69	41	43
	Very Easy	24	22	12	11
	Don't know	16	9	1	1
Find out about activities that are good for your mental well-being?	Very Difficult	5	5	1	1
	Difficult	22	12	9	7
	Easy	96	68	39	38
	Very Easy	19	13	10	10
	Don't know	14	13	1	1
Find information on how your neighborhood could be more health-friendly?	Very Difficult	6	4	1	1
	Difficult	29	13	9	12

	Easy	80	69	37	36
	Very Easy	19	13	9	5
	Don't know	17	12	4	3
Find out about political changes that may affect health?	Very Difficult	6	5	1	2
	Difficult	38	22	11	15
	Easy	78	47	33	34
	Very Easy	12	14	10	3
	Don't know	19	22	5	3
Find out about efforts to promote your health at work?	Very Difficult	6	1	1	1
	Difficult	25	14	6	7
	Easy	83	71	38	46
	Very Easy	18	13	11	1
	Don't know	22	11	4	2
Understand advice on health from family members or friends?	Very Difficult	2	1	0	0
	Difficult	12	8	6	5
	Easy	113	77	41	46
	Very Easy	14	14	9	4
	Don't know	13	8	4	2
Understand information on food packaging?	Very Difficult	4	3	1	0
	Difficult	27	11	9	12

	Easy	90	73	38	39
	Very Easy	22	15	8	6
	Don't know	11	8	4	0
Understand information in the media on how to get healthier?	Very Difficult	4	1	0	0
	Difficult	17	8	8	11
	Easy	100	73	38	38
	Very Easy	18	19	12	5
	Don't know	13	8	2	3
Understand information on how to keep your mind healthy?	Very Difficult	4	3	0	3
	Difficult	15	11	7	7
	Easy	111	74	43	36
	Very Easy	11	12	8	7
	Don't know	13	10	1	4
Judge where your life affects your health and wellbeing?	Very Difficult	7	4	0	1
	Difficult	21	11	7	8
	Easy	96	67	45	37
	Very Easy	13	17	7	9
	Don't know	16	9	1	2
Judge how your housing conditions help you to stay healthy?	Very Difficult	1	5	1	0
	Difficult	20	11	4	6

	Easy	100	65	46	40
	Very Easy	18	20	7	9
	Don't know	14	9	1	2
Judge which everyday behavior is related to your health?	Very Difficult	3	4	0	0
	Difficult	19	9	6	8
	Easy	90	68	45	37
	Very Easy	21	19	7	7
	Don't know	20	10	2	4
Make decisions to improve your health?	Very Difficult	4	2	0	0
	Difficult	16	13	5	10
	Easy	101	68	38	37
	Very Easy	24	21	14	9
	Don't know	9	6	2	1
Join a sports club or exercise class if you want to?	Very Difficult	10	12	1	2
	Difficult	23	14	7	11
	Easy	88	61	42	35
	Very Easy	18	12	9	6
	Don't know	15	11	1	3
Influence your living conditions that affect your health and wellbeing?	Very Difficult	4	8	0	0
	Difficult	24	10	7	9

	Easy	87	70	42	42
	Very Easy	21	14	8	4
	Don't know	18	9	2	2
Take part in activities that improve health and well-being in your community?	Very Difficult	5	6	2	0
	Difficult	24	22	6	10
	Easy	89	65	38	37
	Very Easy	20	10	11	5
	Don't know	16	6	3	5

Table 12: Turkish and International Students Health Literacy Scale responses based on Financial Status

Financial Status		Income equals expenses	Income is more than expenses	Income is less than expenses
Find information about symptoms of illnesses that concern you?	Very Difficult	4	2	11
	Difficult	8	6	23
	Easy	73	31	145
	Very Easy	9	9	26
	Don't know	15	7	25
Find information on treatments of illnesses that concern you?	Very Difficult	1	3	7
	Difficult	18	8	34
	Easy	71	33	142

	Very Easy	8	7	21
	Don't know	11	4	26
Find out what to do in case of a medical emergency?	Very Difficult	1	2	10
	Difficult	21	12	40
	Easy	75	25	136
	Very Easy	5	10	18
	Don't know	7	6	25
Find out where to get professional help when you are ill?	Very Difficult	2	2	10
	Difficult	14	7	35
	Easy	75	36	128
	Very Easy	11	8	37
	Don't know	7	2	17
Understand what your doctor says to you?	Very Difficult	1	4	8
	Difficult	12	1	19
	Easy	74	37	163
	Very Easy	18	10	28
	Don't know	5	3	10
Understand the leaflets that come with your medicine?	Very Difficult	3	4	12
	Difficult	21	9	41
	Easy	60	28	122

	Very Easy	17	7	32
	Don't know	9	6	21
Understand what to do in a medical emergency?	Very Difficult	1	3	9
	Difficult	26	9	53
	Easy	64	29	113
	Very Easy	6	5	25
	Don't know	13	8	27
Understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?	Very Difficult	1	1	6
	Difficult	9	4	15
	Easy	79	38	140
	Very Easy	18	11	52
	Don't know	2	1	15
Judge how information from your doctor applies to you?	Very Difficult	1	3	5
	Difficult	14	6	27
	Easy	72	35	145
	Very Easy	9	5	21
	Don't know	13	6	30
Judge the advantages and disadvantages of different treatment options?	Very Difficult	2	1	7
	Difficult	19	8	32
	Easy	69	38	135

	Very Easy	7	4	23
	Don't know	13	4	29
Judge when you may need to get a second opinion from another doctor?	Very Difficult	3	1	7
	Difficult	21	10	39
	Easy	62	35	122
	Very Easy	7	5	24
	Don't know	17	4	33
Judge if the information about illness in the media is reliable?	Very Difficult	6	8	13
	Difficult	33	9	54
	Easy	41	31	107
	Very Easy	12	3	17
	Don't know	18	3	35
Use information the doctor gives you to make decisions about your illness?	Very Difficult	1	1	5
	Difficult	13	6	25
	Easy	82	35	145
	Very Easy	7	8	22
	Don't know	7	3	24
Follow the instructions on medication?	Very Difficult	1	1	5
	Difficult	5	6	13
	Easy	82	37	147

	Very Easy	20	10	46
	Don't know	2	1	14
Call an ambulance in an emergency?	Very Difficult	6	4	8
	Difficult	12	8	24
	Easy	71	26	123
	Very Easy	14	12	37
	Don't know	6	5	31
Follow instructions from your doctor or pharmacist?	Very Difficult	1	1	3
	Difficult	5	2	11
	Easy	78	42	163
	Very Easy	22	8	37
	Don't know	4	1	8
Find information about how to manage unhealthy behavior such as smoking, low physical activity and drinking too much?	Very Difficult	2	1	6
	Difficult	12	5	16
	Easy	70	34	134
	Very Easy	20	13	40
	Don't know	6	1	24
Find information on how to manage mental health problems like stress or depression?	Very Difficult	3	3	18
	Difficult	25	9	47
	Easy	63	31	118

	Very Easy	13	9	22
	Don't know	6	3	17
Find information about vaccinations and health screenings that you should have?	Very Difficult	1	1	7
	Difficult	19	8	42
	Easy	72	36	128
	Very Easy	8	9	20
	Don't know	9	1	25
Find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?	Very Difficult	1	2	6
	Difficult	19	8	34
	Easy	63	36	136
	Very Easy	17	8	24
	Don't know	9	1	23
Understand health warnings about behavior such as smoking, low physical activity and drinking too much?	Very Difficult	1	3	3
	Difficult	9	1	18
	Easy	68	35	149
	Very Easy	23	14	37
	Don't know	8	1	15
Understand why you need vaccinations?	Very Difficult	1	1	5
	Difficult	9	4	22
	Easy	71	36	136

	Very Easy	24	12	44
	Don't know	5	1	16
Understand why you need health screenings?	Very Difficult	2	0	6
	Difficult	11	4	11
	Easy	65	37	152
	Very Easy	24	9	37
	Don't know	8	3	18
Judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?	Very Difficult	1	2	5
	Difficult	9	4	9
	Easy	77	32	147
	Very Easy	15	9	41
	Don't know	8	5	19
Judge when you need to go to a doctor for a check-up?	Very Difficult	0	2	4
	Difficult	17	7	45
	Easy	69	32	124
	Very Easy	12	11	34
	Don't know	12	2	16
Judge which vaccinations you may need?	Very Difficult	4	2	6
	Difficult	24	12	59
	Easy	55	35	104

	Very Easy	10	3	21
	Don't know	17	2	33
Judge which health screenings you should have?	Very Difficult	0	1	9
	Difficult	22	13	50
	Easy	59	31	117
	Very Easy	11	6	19
	Don't know	17	3	27
Judge if the information on health risks in the media is reliable?	Very Difficult	5	3	11
	Difficult	25	12	45
	Easy	51	30	113
	Very Easy	11	5	20
	Don't know	17	4	32
Decide if you should have a flu vaccination?	Very Difficult	4	0	4
	Difficult	22	7	50
	Easy	58	34	109
	Very Easy	6	7	22
	Don't know	20	6	34
Decide how you can protect yourself from illness based on advice from family and friends?	Very Difficult	3	1	3
	Difficult	20	9	25
	Easy	65	31	140

	Very Easy	14	11	31
	Don't know	7	2	21
Decide how you can protect yourself from illness based on information in the media?	Very Difficult	4	0	6
	Difficult	20	6	36
	Easy	62	36	143
	Very Easy	11	9	16
	Don't know	12	2	20
Find information on healthy activities such as exercise, healthy food and nutrition?	Very Difficult	1	1	3
	Difficult	7	4	17
	Easy	73	37	142
	Very Easy	21	9	39
	Don't know	7	3	17
Find out about activities that are good for your mental well-being?	Very Difficult	5	0	7
	Difficult	15	8	27
	Easy	67	34	140
	Very Easy	15	8	29
	Don't know	7	4	18
Find information on how your neighborhood could be more health-friendly?	Very Difficult	4	1	7
	Difficult	17	10	36
	Easy	62	34	126

	Very Easy	14	4	28
	Don't know	12	5	19
Find out about political changes that may affect health?	Very Difficult	4	1	9
	Difficult	21	9	56
	Easy	53	31	108
	Very Easy	11	7	21
	Don't know	18	6	25
Find out about efforts to promote your health at work?	Very Difficult	5	0	4
	Difficult	11	10	31
	Easy	68	32	138
	Very Easy	10	8	25
	Don't know	15	4	20
Understand advice on health from family members or friends?	Very Difficult	1	0	2
	Difficult	13	3	15
	Easy	77	42	158
	Very Easy	11	7	23
	Don't know	7	1	19
Understand information on food packaging?	Very Difficult	2	1	5
	Difficult	19	5	35
	Easy	65	40	135

	Very Easy	14	6	31
	Don't know	9	2	12
Understand information in the media on how to get healthier?	Very Difficult	2	1	2
	Difficult	17	5	22
	Easy	67	36	146
	Very Easy	14	10	30
	Don't know	9	2	15
Understand information on how to keep your mind healthy?	Very Difficult	4	2	4
	Difficult	12	5	23
	Easy	70	40	154
	Very Easy	13	4	21
	Don't know	9	3	16
Judge where your life affects your health and wellbeing?	Very Difficult	5	2	5
	Difficult	19	7	21
	Easy	61	38	146
	Very Easy	13	5	28
	Don't know	10	2	16
Judge how your housing conditions help you to stay healthy?	Very Difficult	1	1	5
	Difficult	12	3	26
	Easy	76	37	138

	Very Easy	12	11	31
	Don’t know	7	2	17
Judge which everyday behavior is related to your health?	Very Difficult	3	0	4
	Difficult	18	7	17
	Easy	63	32	145
	Very Easy	15	10	29
	Don’t know	10	4	22
Make decisions to improve your health?	Very Difficult	1	0	5
	Difficult	11	3	30
	Easy	75	38	131
	Very Easy	18	10	40
	Don’t know	3	3	12
Join a sports club or exercise class if you want to?	Very Difficult	5	4	16
	Difficult	18	6	31
	Easy	66	36	124
	Very Easy	11	6	28
	Don’t know	9	2	19
Influence your living conditions that affect your health and wellbeing?	Very Difficult	2	0	10
	Difficult	12	7	31
	Easy	74	36	131

	Very Easy	10	8	29
	Don’t know	12	3	16
Take part in activities that improve health and well-being in your community?	Very Difficult	2	1	10
	Difficult	11	8	43
	Easy	74	35	120
	Very Easy	12	6	28
	Don’t know	11	4	15

CHAPTER 5

DISCUSSION

The research was based on four parametric tests- age, gender, academic year and financial status, of which to a certain level, the results displayed in the previous chapter showed relationship between health literacy and vaccination, especially in nursing students. This gave rise to the two hypotheses of our study:

H1: Nursing students' health literacy level affects their vaccination status

H0: Nursing students' health literacy level does not affect their vaccination status

After taking into consideration all parameters involved, but did a non-parametric test on 'academic year' against 'vaccination,' the first hypothesis **(H1)** remains valid for most of the vaccines explained earlier, except for Varicella (VAR), Hepatitis B (HepB) and Meningococcal B (MeninB), thereby supporting **H0.** Based on the data collected from the thorough research done, it can be inferred that for the three (3) vaccines mentioned above, the health literacy of the nursing students does not influence their vaccination status. However, it holds for all other vaccinations touched in this paper.

Attached below are the P-values for all the parameters used in the research based on the data collected. It should be noted the highlighted/painted values are the ones less than 0.100.

H1: NURSING STUDENTS' HEALTH LITERACY LEVEL AFFECTS THEIR VACCINATION STATUS

An important aspect in raising vaccination rate is health literacy. Lower vaccination uptake and vaccine reluctance have been associated with low health literacy. Yet, enhancing health literacy can result in greater understanding of vaccines, elevated faith in nurses and other medical

professionals, and enhanced communication, all of which raise vaccination rates. We will examine a number of studies and sources that support this hypothesis.

According to several studies, delivering brief, factual information about vaccines can boost vaccination rates. For instance, Lin et. al. (2020)' systematic evaluation of 35 researches discovered that interventions were made to improve health literacy, which in turn increased vaccination uptake among different populations. Similar findings were made by Gualano et al. (2018), who discovered that an educational intervention increased healthcare workers' adoption of the influenza vaccine. Low health literacy patients might find it challenging to comprehend complicated medical lingo, which makes it challenging for them to make wise decisions about their health. According to a study by Davis et al. (2016), parents of adolescent girls were more likely to receive the HPV vaccine after receiving a health literacy intervention that employed visual aids and simple language. Misinformation regarding vaccinations, especially on social media, might cause vaccine reluctance and lower vaccination rates. High health literacy individuals are better able to examine vaccine information critically and differentiate between trustworthy and reputable sources. According to a research by Feemster et al. (2021), parents of young children were more likely to receive the influenza vaccine after a health literacy intervention that addressed vaccine myths. Similar findings were made by Brewer et al. (2017), who discovered that a health literacy intervention that included training in communication skills for nurses and other healthcare professionals increased adult influenza vaccine uptake. People with poor health literacy may be more hesitant to receive vaccinations because they distrust nurses and other medical professionals. These professionals are more likely to gain their patients' trust and enhance vaccine uptake if they exhibit cultural sensitivity, empathy, and respect for their patients' beliefs and values. According to a study by Ishikawa et al. (2016), patients with high levels of health literacy also had better levels of trust in their medical professionals, which increased the rate of vaccination.

These papers by notable scholars in the health field further supported our hypothesis of health literacy being a major factor in increasing the rate of vaccination and immunization.

- **'The Role of Health Literacy in Vaccine Acceptance and Adherence'** explained the impact of health literacy on vaccine acceptance and adherence. This paper which was published in the Journal of Health Communication drew the conclusion that a barrier to

vaccination uptake is a lack of health literacy, and that interventions to increase health literacy may be successful in boosting vaccine acceptance and adherence.

- **'The relationship between young individuals' human papillomavirus vaccination status and health literacy'** investigates the association between health literacy and young adults' human papillomavirus (HPV) vaccination status. The paper was published in the Journal of Health Communication. The authors discovered that lower HPV vaccination rates among young adults are related to inadequate health literacy.

These publications offer proof that raising health literacy is a key tactic for raising vaccination rates and enhancing the results of public health initiatives.

H0: NURSING STUDENTS' HEALTH LITERACY LEVEL DOES NOT AFFECT THEIR VACCINATION STATUS

As discussed earlier, taking a non-parametric test on 'academic year,' based on the P-values displayed before, it was discovered that increasing health literacy does not affect or increase vaccination, especially in nursing students. From another stand-alone research on the vaccination coverage among nursing students in a tertiary institution in South-Eastern Nigeria, it was seen that despite the enormous amount of health literacy that these nursing students receive almost on a daily basis, a larger percentage still have an almost little amount of fear and distrust, and even show less concerns towards vaccination. This study, which was published in the Journal of Infection Prevention indicated that just 50% of the participants had received the hepatitis B vaccine, indicating that nursing students had a low vaccination coverage rate. Also, the study discovered that there was no discernible difference in vaccine coverage across pupils with high and poor levels of health literacy. This implies that vaccination uptake among nursing students may not be significantly influenced by health literacy.

A dissertation which was submitted to the University of Alabama titled 'Factors affecting vaccination uptake among nursing students in the United States' examined the determinants influencing vaccination uptake among nursing students in the United States. The study discovered that vaccination uptake among nursing students was not significantly influenced by health literacy. The study discovered that perceived susceptibility to vaccine-preventable diseases, perceived

vaccine effectiveness, and peer and family influence were instead the most important characteristics linked to vaccine uptake.

The argument that improved health literacy increases vaccination uptake among nursing students is refuted by the sources presented in this thesis. These sources recommended that social influence, attitudes, and beliefs about vaccination are more important influences on vaccination uptake among nursing students than things like perceived susceptibility to vaccine-preventable diseases, perceived vaccine effectiveness, and perceived social influence. Concern should be expressed concerning the low vaccination rate among nursing students as described in Article 1. Yet, the lack of a substantial relationship between health literacy and vaccine uptake shows that there may be other factors at work.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

Conclusively, from the above research and resulting data collected, it can be inferred that the first hypothesis **(H1)- 'Nursing students' health literacy level affects their vaccination status'** remains valid and will therefore conclude this thesis. This assumption and conclusion were made as a result of the articles and sources supporting the already established theory, arising from the analysis of the gotten data. These responses gotten from the questionnaires sent out were convincing enough, backed by published articles, especially by world leading health bodies to certify that increasing vaccination rates depends heavily on health literacy. Health literacy programs can aid in boosting vaccination rates and advancing public health by enhancing vaccine knowledge, communication, addressing vaccine misinformation, and fostering trust. To ensure that everyone has the knowledge and skills necessary to make informed decisions about their health, health literacy should be incorporated into vaccination programs and healthcare provider training.

The findings of this study may have significant ramifications for nursing practice and education. If nursing students' lack of health literacy is shown to be a deterrent to vaccination behaviour, measures to raise health literacy may be required. Nursing courses, for instance, might be developed to include instruction in health literacy and information on the value of vaccination. Also, soon-to-be nurses and other healthcare professionals could convey vaccine information to

people with limited health literacy using plain language and visual aids. Overall, by studying the connection between health literacy and vaccination behavior among nursing students, this study intends to close a gap in the literature. The outcomes could guide public health initiatives that attempt to increase vaccination rates.

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