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Understanding Undergraduate Shared Decision Making and Health Decisions

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HONR 451H-01: Honors Senior Thesis

Dr. Jacobs-Lawson

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Abstract

Undergraduate students possess a unique set of health concerns such as high rates of COVID-19, STI infections, and mental health issues that are unseen in other age groups of the population. One important aspect of health decision making is how involved the person is in making their health decisions, referred to as shared decision making. This research, completed as an Honors Thesis, focused on understanding undergraduate health-related decisions. Specifically, (a) it examined how health locus of control, personality, and gender impacted preferences toward shared decision making, (b) undergraduate students' preferred healthcare providers for six illness states, and (c) the likelihood of sharing health information with their parents/guardians. Data was collected using a survey. The results revealed that personality and health locus influence preferences for shared decision making. Undergraduate preferences for healthcare provider varied for men and women based on the illness state. With respect to communicating health related issues with their parents/guardians, they were more likely to share diagnoses. They were most likely to share serious conditions and least likely to share sexual health information. By better understanding how involved undergraduate students prefer to be in shared decision making, their preferred healthcare providers, and what health information they share with their parents/guardians, colleges and universities can improve the health services they provide for their students and promote long-term healthy lifestyle behaviors.

Understanding Undergraduate Shared Decision Making and Health Decisions

Undergraduate students typically experience increased incidences of many illness states, especially during the COVID-19 pandemic. However, there is little understanding of undergraduate students' health decisions. Three significant areas of weakness is (a) knowledge of preferences toward shared decision-making (SDM) in health-related decisions, (b) what healthcare provider they prefer to see for different illness states, and (c) how much health-related information they share with their parents or guardians. This thesis sought to determine if the undergraduate population extends the trends in SDM seen in older populations and how personality, gender, and health locus of control (HLOC) impact patient preferences for SDM. It also studied what healthcare providers undergraduates prefer to see for different illness states and the likelihood that students will share health information with their parents/guardians. Learning about current health-related communication between parents and undergraduate students will allow schools to better understand how to increase or improve parental/guardian involvement in their student's health, which has been associated to improved overall health of students. By increasing the knowledge surrounding undergraduate student healthcare preferences, both colleges and medical providers can improve the health of students and provide better healthcare for students.

This thesis will begin by reviewing general college student health statuses. It will then review the variables that influence undergraduate health decisions such as SDM, personality, gender, and HLOC. It will then review student preferences towards involving parents/guardians in health decisions and health care provider preference for different illness states. Data for this thesis was collected by surveying undergraduate students through SurveyMonkey. Data was analyzed through SPSS.

Literature Review

The unique health concerns that college students face and how they utilize healthcare resources, especially on-campus resources, was reviewed in order to determine what illness states are prevalent on college campuses and to see what type of healthcare appointments are most frequently used. The variables that influence undergraduate students' health decisions including SDM, personality, HLOC, and gender was also reviewed, including any possible correlation they might have towards SDM. The impact of illness state on healthcare provider preference and what information is shared with parents/guardians was also assessed from the current literature.

College Student Health Status

In 2017, the traditional college-age population of 18–24-year-olds was 30.6 million in the United States (Indicator 1: Population Distribution, 2019), while undergraduate students constituted approximately 16.6 million of those individuals as of the Fall of 2018 (National Center for Education Statistics , 2020). The young adult population in the United States poses a unique set of issues to the healthcare system that makes them an important subset of the population to study. The rates of COVID-19, mental health issues, and STIs amongst this age group is often the highest when compared to any other age group. The young adult population are also at an “in-between” stage of their lives and are often still reliant on parents/guardians for financial aid, healthcare, and support. Students are also reliant on parents/guardians for health insurance coverage, especially since the Affordable Care Act. Since it was passed, health insurance coverage for college students increased by ten percent for all students and increased by 17 percent for undergraduates in poverty (Mishory et al., 2018). Since students are still often

reliant on their parent's or guardian's healthcare, they are often still included in their healthcare decisions and treatments.

Due to the unique health concerns that college students present, it is necessary to study current undergraduate health, their access to healthcare, and how they approach health-related decisions and illnesses. It is important for students to access preventative healthcare in college such as yearly wellness checks to develop healthy habits and promote their long-term health. Young adults are less likely than other age groups to access health care, but they are more likely to seek healthcare from the emergency room than their surrounding age groups. Serious future illnesses can be avoided or treated more effectively if there are preventative measures taken such as screenings and counseling on subjects such as smoking and mental health (National Research Council, 2015). Since emergency room services are often more expensive than seeing other healthcare providers for the treatment of illnesses, it is important to understand undergraduate students preferred providers for different illness states, so colleges and universities can better staff their health services and avoid the use of expensive emergency services.

A study on US colleges in 2008 showed that almost 92% of the undergraduate students they surveyed ranked their own health as good, very good, or excellent. The Body Mass Index (BMI) averages for both men and women supported their rankings, with both BMI averages within the healthy weight range. However, when analyzing more specific areas of health, such as diet and exercise, the data did not support the notion that college students lived as healthy of a lifestyle as they had indicated. Only 8.5% of students had the recommended 5 or more servings of fruits/vegetables daily, and less than half exercised at the recommended levels (American College Health Association, 2008). The impact that young adults, especially college students, pose to the healthcare system, coupled with their newfound independence as they move away

from their parents/guardians, make it necessary to understand how undergraduates make their health decisions.

Undergraduate students also suffer from lack of sleep, poor sleep quality, and insomnia disorders. Approximately 60% of all undergraduate students in the United States suffer from poor sleep quality, and almost 8% of students have an insomnia disorder (Schlarb et al., 2017). The average sleep of an undergraduate student is currently around 6.65 hours, which is lower than the recommend 7-9 hours of sleep for individuals in their twenties (Vail-Smith et al., 2009). College students also account for a high percentage of the STIs in the United States. Almost half of new STI infections each year are accounted for by 15–24-year-olds. Since around 40% of 18-24 year olds are enrolled in an undergraduate program, a significant amount of new STI infections each year are from undergraduate students (Habel et al., 2018). In order for the healthcare system to understand how STI transmission can decrease, it must understand why transmission is so high amongst this population and who the undergraduate population prefers to see for treatment of STIs.

One recent significant issue facing our healthcare system, COVID-19, has the highest incidence amongst those in the 18-24 year old age group. The CDC believes that young adults might be the largest source for community transmission of COVID-19 (Leidman et al., 2021). Colleges specifically have been a focus of studying COVID-19 transmission, especially as students returned home for winter holidays. Therefore, undergraduate students are an important area of focus in reducing COVID-19. Mental health issues are also significantly high in young adult populations, especially in college, with approximately 11.9% of college students currently suffering from an anxiety disorder. Depression is also a major mental health issue among students, affecting between 7-9% of all students, and suicide is the third leading cause of death

for young adults in the US (Pedrelli, et al., 2015). The new stressors of attending college may begin or worsen pre-existing mental health conditions, and there is often low adherence to treatment for mental health in undergraduate students. Increased parental or familial involvement in care for undergraduates may improve adherence to treatment, but one first must understand the extent that students are sharing their mental health concerns or treatments with their parents.

College Students Healthcare Resource Usage

Not only is it important to consider the health of undergraduate students, but it is also crucial to consider the type of medical appointments that students use. College students often use on-campus health services with as many as 49% of students using these services per year at private universities (McBride et al., 2010). Previous research on undergraduate student health shows that the most common appointments used by undergraduate students are the following: primary care, mental health, vaccination appointments, and the category “other” (lab tests, dental, physical therapy, optical visits). Although primary care visits were the most common appointment type, making up around 60% of all appointments, primary care appointments did not have the highest average of appointments per patient. Mental health and Developmental/Cognitive appointments had the highest number of visits per patient, each of them averaging at higher than 3 appointments per person. This research also showed that the African American, Asian, and Hispanic students were all more likely to use health services than white or Native American students while in college, especially for primary care services. Female students were also more likely than male students to use the health services offered on college campuses (Turner & Keller, 2015). Understanding why students are going to medical appointments can also showcase what students view as the largest issues for their health.

Individuals who have fewer medical appointments, such as men, pay point to stigma surrounding men's health and accessing care.

Although young adults are unlikely to have a chronic condition, with only approximately 20% of young adults having a chronic condition, when compared to older adults, young adulthood is an important time to develop healthy lifestyle habits (Lemly et al., 2014). However, many undergraduate students do not eat the recommended dietary requirements or fulfill the recommended daily exercise for their age group. Young adults also have a higher incidence of mental health issues, have high incidences of COVID-19 infections, and account for a high percentage of STI cases each year. Undergraduate students need to be studied separately than other individuals in the same age group because of how they access medical care, the stressors they face, and because their relationship to their parents/guardians may differ from their peers who do not attend school. Many college students seek healthcare directly through on-campus medical services, which are typically not available to other young adults or the general population. Students may also be more likely to use a parent or guardians' health insurance than their peers who are not in school. This reliance on a parent or guardian's health insurance may make the student involve their parents more in their health decisions. Therefore, young adults, particularly college students, should be studied to determine who they make their health decisions, so the healthcare system knows best how to support and improve undergraduate student health.

Variables related to Undergraduate Health Decisions

Although undergraduate students experience many of the same illnesses, their preferences for making health decisions varies across students. One important aspect of health decisions making is how involved the person is in making their health decisions, referred to as

SDM. Preferences towards SDM are impacted by personality, gender, and HLOC. It is also likely the effects of these variables will be dependent on the severity and type of illness state. Illness state may also impact how undergraduates make health decisions, their preferred provider, and what information they share with their parents.

Shared Decision-Making Preferences

Although research on SDM in healthcare is increasing, researchers have yet to agree on a common definition. In a review of literature on SDM found on PubMed, Makoul and Clayman (2006) found that the researchers did not have a singular definition for SDM. They assessed 161 articles to find common words or phrases associated with SDM. The six most common terms were: patient values/preferences, options, partnership, patient participation, patient education, and benefits/risks. They then separated the terms into two categories: essential elements and ideal elements. Essential elements are necessary for patients to be involved in SDM, and ideal elements are not necessary for SDM but can improve SDM. The essential elements- explanation, discussion, assessment, patient values/preferences-are at the focus of most current studies on SDM.

SDM is a collaborative process amongst a healthcare provider and a patient. It initially requires the healthcare provider to understand the patient's preference for information and attitude toward decision-making. The healthcare provider then identifies different possible choices for medication or treatment and discusses the different benefits or potential side effects of each option. Finally, the healthcare provider should help the patient consider the different options carefully, and together they will come to a decision. (Elwyn et al., 2000). SDM is an important practice in health care because it helps to create a trusting relationship between the

patient and medical provider, and it increases the likelihood of a patient following through on their medication or treatment (National Learning Consortium, 2013).

Most studies show that women, more educated, and healthier people typically prefer to have a more active role in the decision-making process compared to men, less educated participants, and less healthy participants. In a study where adults' attitudes toward SDM were studied, it showed an increase in how active a person wants to be in the decision-making process up to the age of 45; after the age of 45 years old, individuals wanted a less active role. Minority populations are also shown to want a less active role in the decision making process (Levinson et al., 2005). Since the undergraduate population has often been excluded from these types of studies, it is important to see if this subset of the population will extend the trend that younger adults want to be more involved in SDM when compared to older adults. By including demographic questions regarding race and ethnicity in this study, it can be determined if minority populations in college also prefer a less active role in SDM.

In a study comparing young adults in the United States and Japan, the attitudes for different physician decision-making styles for a relatively common and mild illness-an upper respiratory infection-were examined. Three potential models of physician-patient interaction were evaluated: a passive patient model where the physician solely makes the decisions, a SDM model that involves communication and collaboration between patient and physician, and an autonomous patient model where the final decision is up to the patient. The participants in the United States were between 18-30 years old, and 84% of students were undergraduate students.

Each participant completed a scenario-based experimental survey with three sections. The first section assessed their preferred decision-making model prior to reading their assigned scenario. The second section involved reading a scenario of a healthcare provider and a patient

that described either a passive patient model, an SDM model, or an autonomous patient model. The third section then evaluated how they felt about the communication in the scenario.

The United States participants usually gave a negative evaluation for passive decision making in both their pre-scenario and post-scenario surveys. The participants most highly ranked or provided a “positive response” to the scenario that modelled shared decision making. A positive response indicates that respondents rated the service quality, expectancy disconfirmation, feelings of satisfaction, and behavioral intentions (how likely they would be to recommend this provider to others) fairly high, and a negative evaluation is when the respondents gave these factors a low rating (Alden et al., 2010). Since this study focused primarily on young adults, this high preference for SDM may also be seen in the undergraduate population that will be studied.

Rosén, Anell, and Hjorstberg (2001) studied both patient preferences for choice and attitudes for SDM for 1543 primary care patients in Sweden. They examined how respondent age, education, and socio-economic status impact patient attitudes and preferences in a primary care setting. Patients (n=1543) were recruited through primary care practices and were given a survey to complete. The survey asked questions regarding their preferences for choosing their primary-care physician, preferences for the amount of information given, and how involved they wanted to be in treatment selection. The majority of participants preferred SDM when treatment selection was involved. Increased levels of education were shown to have a higher correlation to preferring SDM, but there was no significant correlation between SDM preferences and the presence of chronic illnesses, number of physician visits, or healthcare experiences. Since education level was seen to have a correlation to attitudes towards SDM, then studying the undergraduate population attitudes towards SDM, rather than just young adults, is important.

SDM may also be impacted by one's overall health status or by the frequency that they need health services. A young adult population of primarily women who all had Type I Diabetes was studied to determine their SDM preferences. The study included both a quantitative and a qualitative component. The quantitative aspect of this study was a survey created by the authors of this study, and it consisted of 96 questions that assessed type 1 diabetes self-management and 7 questions about SDM. The qualitative aspect of the study consisted of the participants attending focus groups where different parts of SDM were asked in an open-ended format. The quantitative results showed that a majority of their health encounters regarding their diabetes did involve SDM, and the focus groups showed that the participants preferred medical providers who actively involved the patient in the decision making process (Wiley et al., 2014). This study suggests that young adult patients with chronic illnesses may still want to be involved in the SDM process. However, the participants of the study by Wiley included mostly women and those with higher levels of education than the national average, so this may not reflect other populations. One of the goals of the present study is to examine the preferences for SDM regarding the presence of chronic illnesses.

Personality

Personality traits have been shown to have strong correlations to several different health statuses. For example, personality has been shown to correlate with stress, happiness, and even quality of life. It has also been linked to the likelihood that one will develop substance abuse disorders, cardiovascular health issues, and mental health conditions (Srivastava & Das, 2015). Personality may also play a significant effect on a patient's attitudes towards SDM and their level of participation in this process.

The Five Factor Model (FFM) of personality is the dominant model in personality research today. It originated from early trait psychology, but it was not well-established with its current personality traits until Tupes and Christal saw the significance of this model. The five factors in this model are the following: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Most of the research shows that individuals decrease in neuroticism and extraversion as they age from adolescence, but individuals typically increase in agreeableness and conscientiousness as they age from adolescence. Openness will increase until a period in the twenties, and then slowly decrease for the remainder of one's life. Most studies also show that women have higher levels of agreeableness and neuroticism compared to men (McCrae, 2009).

Openness has been shown to affect how involved patients want to be in the decision-making process (Flynn & Smith, 2007). Openness is defined as the inclination to be open to new experiences and carefully examine these new experiences. Openness is correlated with lower blood-pressure reactivity when in stressful situations and lower threat appraisal. A threat appraisal occurs when one believes that their ability to cope with a situation is insufficient to meet the situation or stressor. A person with a lower threat appraisal means that a person is less likely to believe that they are unable to handle a stressful situation (Soye & O'Súilleabháin, 2019). Flynn and Smith (2007) looked at the relationship between the five factors of personality and health-related SDM. This study was conducted using some of the participants of the Wisconsin Longitudinal Study, whose ages were primarily ranging from 63-65 years old. In order to measure personality, 29 items on the Big Five Inventory-54 (BFI-54) were chosen to measure extraversion, agreeableness, conscientiousness, neuroticism, and openness. A scale to measure patient preferences for information exchange, deliberation, and decisional control was created by the researchers Flynn and Smith. This study showed that increased levels of openness

or conscientiousness led to increased involvement in the decision making process (Flynn & Smith, 2007). Individuals with higher levels of openness or conscientiousness were more likely to want to participate in deliberation with the physicians. and make important medical decisions. Since this study primarily looked at adults in their 60s, the thesis can see if this trend is extended to younger adults.

Another important personality trait that affects health is emotional stability. Emotional stability has been strongly related to good general health status. Johnson, Batey, and Holdsworthy examined how the Big Five personality traits and emotional intelligence determine how they relate to general health status (2009). They surveyed 328 undergraduate students, ages 17-26 to collect their data. They used Five-Factor Model of Personality (FFM) mini-markers to measure personality traits, the Trait Emotional Intelligence (EI) questionnaire to measure emotional intelligence, and the 12-item General Health Questionnaire to measure general health status. Through their analysis, they determined that emotional intelligence, which gives rise to emotional stability, is strongly related to general health status (Johnson et al., 2009).

Another study that focused on emotional stability and health studied oxytocin, a neuropeptide produced in the hypothalamus of the brain. High oxytocin levels are associated with increased trust, increased extraversion, and increased openness to experiences. This study focused specifically on OXTR rs53576, a polymorphic site on the oxytocin receptor gene. This polymorphic site was known to correlate with sociality, empathy, and stress reactivity. The study determined that individuals with the homozygous G allele have higher emotional stability, which correlates to a better overall health status (Massey-Abernathy, 2017). Although emotional stability is correlated to general health status, there has been little research to see if emotional

stability is correlated to SDM preferences. This thesis will help determine if what connects emotional stability to general health statuses could be SDM preferences.

Introversion also has been shown to have correlations to health outcomes in certain situations. A comprehensive literature search and review by Marin and Miller (2013) found that the combination of introversion and a “potentially aversive social environment” were seen to have the strongest negative effects on health outcomes. A potentially aversive social environment could be due to the individual’s perceived stigma surrounding their medical condition. Although there is a lack of literature about the relationship between introversion and health SDM, some studies have looked at the influence of introversion on decision making styles and abilities. Khalil studied 370 adults, from ages 18 to 45, to see how their levels of extraversion or introversion impact their decision-making abilities (2016). Each participant completed the Eysenck Personality Questionnaire (EPQ) and a decision-making questionnaire. The study found that only one third of the introverts did not need the assistance of other people when faced with an important decision. The study also found that 79% of the introverts studied used their inner feelings and intuition when making decisions (Khalil, 2016). Since most introverts in this study prefer the involvement of others when making important decisions, introverts might prefer a less active role in SDM and prefer that the healthcare provider is primarily in charge of health decisions.

Johnson, Batey, and Holdsworthy (2009) showed that extraversion is strongly related to general health status. Extraversion is also positively related to emotional intelligence, which is one of the core components of emotional stability. The study speculated that emotional intelligence may be involved in predicting general health status because it allows one to manage

stressors and be able to recognize the parts of their personalities that may further or produce stress. This lowered overall stress level could result in a positive impact on overall health.

Gender Differences in Health Decision Making

Gender differences can result in significantly different health statuses and behaviors. Over their respective lifespans, women have decreased use of harmful substances such as drugs and alcohol. Women also are more likely to seek healthcare than men. Lastly, women also have higher morbidity rates but longer longevity than men (Manandhar et al., 2018). There are also significant differences between the sexes when comparing their attitudes towards health SDM. Levinson, Kao, Kuby, and Thisted (2005) measured preferences for participation in health SDM. They recruited 2,750 participants who had an average age of 46 years, were predominately white, and mostly female (56%). This study used both the General Social Survey (GSS) to obtain demographic information and a scale with 3 statements to measure preferences for knowledge, options, and decision making in healthcare. The results showed that women wanted a more patient-directed process in all three main areas of SDM: knowledge, options, and decisions compared to men. Women were also more likely to come to medical appointments with questions and medical information they had already found (Levinson et al., 2005).

A narrative review of 33 articles published from 1975-2003 examined what effects a patient's preferences in health SDM such as demographic variables, health statuses, and experiences with their illness. The study found that younger individuals, women, individuals in the upper economic class, and white patients were more likely to prefer to be involved in SDM when compared to older participants, men, individuals in the lower economic class, and black participants, respectively. All the studies that found that sex had an association with SDM found that women were more likely to have a more active role than men (Say et al., 2006). This thesis

will assess if the trend of women preferring a more active role than men in SDM extends to the undergraduate student population.

Health Locus of Control

HLOC is an individual's beliefs about what factors control their general health status. There are two types of external HLOC: powerful others and chance. Individuals with a powerful others HLOC believe that people in positions of power, such as healthcare professionals, control one's health. Individuals with a chance HLOC believe that luck and chance are the primary factors controlling one's health. An internal HLOC means that a patient believes that they have the ability to control and improve their health through their own actions (Braman & Gomez, 2004). Zhang and Jang (2016) examined if there were correlations between HLOC and gender, race, education, and health status. This study had 4963 respondents recruited from the Midlife Development in the United States. (MIDUS II). Each participant completed a 30-minute interview and a questionnaire. They were asked questions regarding their self-rated health, demographics, and health statuses. Participants also completed a HLOC scale. Their analysis focused on participants who were at least 60 years or older and showed that the groups of people who had the highest rankings of internal HLOC were white, younger, and had completed higher levels of education. Women were also seen to have higher rankings of internal HLOC when compared to men. The groups with the lowest rankings for internal HLOC had chronic conditions or a functional disability.

HLOC is also correlated with the likelihood of individuals performing healthy lifestyle behaviors (HLB). Açıkgöz and Kitiş, (2017) surveyed 572 undergraduate students. Each participant completed a set of demographic questions, the Health Promoting Lifestyle Profile II scale, the MHLC scale A, and the Perceived Health Competence Scale. As internal HLOC

increased, the likelihood to perform HLBs increased. However, as chance HLOC increased, the likelihood to perform HLBs decreased. Powerful others HLOC was shown to have a both direct and indirect effect on HLB and had the strongest correlation out of the three studied HLOCs. As powerful others HLOC increased, the likelihood to perform HLB increased. This increase may be due to the influence of family and peers that is especially prevalent during undergraduate schooling (Açıkgöz & Kitiş, 2017). Since individuals with better overall health statuses are often more likely to be involved in SDM, then the three types of HLOC might impact how involved they are in SDM. There could also be a large number of students with a Powerful Others HLOC in this thesis since all participants are undergraduates.

Powerful Others HLOC have been shown in previous studies to be correlated to involvement preferences in SDM. Braman and Gomez studied personality traits effects on SDM, including HLOC, assertiveness, self-efficacy, and conservatism. The study had 120 participants with an average age of 72 years old. Each participant had to fill out a scale corresponding to each personality trait measured, and the study used the Multidimensional HLOC Form B for the HLOC measure. After performing a hierarchical multiple regression analysis, the study determined that there was a very strong negative correlation between powerful others and behavioral involvement in SDM. This correlation was seen regardless of age, sex, or education level (Braman & Gomez, 2004).

Internal HLOC was hypothesized to have a positive correlation to involvement in SDM, but some studies found no correlation between these variables. Braman and Gomez (2004) found an insignificant correlation between SDM and internal HLOC. Another study also measured SDM and internal HLOC and found similar results. This study had 153 adult participants, with a mean age of 40.32, complete the Multidimensional HLOC scale and a control preference scale

regarding health decisions. This study found that internal HLOC differences had no correlation to control preferences in health-related decision making (Marton et al., 2020). Both of these studies have shown that internal HLOC does not have a significant impact on SDM preferences. However, both studies' participants had an average age that was significantly higher than the age of most undergraduate students. Since these studies have not studied a population in the general age range of undergraduate, undergraduate students may have a positive correlation between internal HLOC and SDM as hypothesized in the other studies.

The relationship between chance HLOC and SDM has not been clearly studied. However, Brincks, Feaster, Burns, and Mitrani (2010) found a relationship between trust in a physician and chance HLOC. This study's participants were all HIV + women, and each participant completed the Trust in Physician Scale and multidimensional HLOC scale. The results revealed that the chance HLOC was strongly correlated to a lack of trust in a physician (Brincks et al., 2010). A person who lacks trust in a physician or health care provider might also be less likely to engage in SDM with a health care provider. This thesis will directly study if chance HLOC is correlated to SDM in the undergraduate population.

Health Care Provider Preference

Some patients prefer different healthcare providers depending on the type of illness state. Patient preferences for different healthcare professionals may largely be due to the severity of the illness state. Larkin and Hooker (2010) studied patient's willingness to see different types of healthcare professionals in an Emergency Room setting. They surveyed three healthcare professionals-Physician Assistants (PAs), Nurse Practitioners (NPs), and residents (MDs)-and surveyed patients (N=507) to determine their willingness to see a PA, NP or resident for three different illness categories. For a minor injury/illness, which was described as a sprained ankle or

a cold, slightly more than 50% of patients would be willing to use an NP or a PA but a resident was preferred. For a more serious injury/illness (broken ankle, stitches) or a major injury/illness (chest pain, amputation), patients' willingness to see an NP or a PA ranged from 15-35% and seeing the resident was preferred (Larkin & Hooker, 2010). Therefore, there was a significant decrease in patient's willingness to see an NP or PA instead of a resident as the severity of the illness increased. Since the preference for residents over NPs or PAs was due to the perceived level of knowledge by the patients, this trend might also extend to nurses, whereas the severity of the illness increases, the likelihood that a patient will be willing to see a nurse decrease. A majority (61.7%) of participants were 30 years old or older, so most of the participants are unlikely to be undergraduate students. Therefore, this thesis will see if this trend extends to the undergraduate and younger population.

There are also differences between if patients prefer to see their regular primary care physician or a specialist for different illness states. One study conducted 314 interviews across ten different general internal medicine practices. Adult participants, with a mean age of 55 years old, were asked questions regarding their regular doctor, questions about different illness states and their preferences for receiving care, and perceived competencies of different providers for different illness states. The regular doctor was preferred for all fifteen of the illness states: high blood pressure, high cholesterol, hemorrhoids, sinus infection, stomach ulcer, diabetes, blood in stool, UTI, bad headache, anxiety, prostate problem, ingrown toenail, stitches, changes in mole, starting birth control. There were four illness states where some participants did have a preference to see a specialist, where at least a fifth or more of participants would want to see a specialist. The four illness states were a prostate issue, starting birth control, changes in a mole, and an ingrown toenail (Lewis et al., 2000). Therefore, a primary care provider seemed to be

preferred for most common and non-serious conditions, but some participants did prefer to see a specialist for matters of sexual health and new, potentially serious illness states. Preferences for primary care providers versus specialists has not been clearly studied for younger populations, especially for the undergraduate population. This thesis will examine if specialists are preferred over primary care providers for the same or similar conditions as is seen in older populations.

The type of provider that a patient prefers to see for mental health may be different than for physical health. One study surveyed 1,095 adults through a Michigan State University telephone survey and asked questions about mental health coverage, Medicare and mental health, and what type of provider one would prefer to see for mental health. When given the following options- primary care provider, psychiatrist, psychologist, social worker, member of the clergy, family member or friend, mental health clinic, other or nowhere-over 50% of respondents answered that they would prefer to seek mental health support from their primary care physician. The other three most common providers chosen were a psychiatrist, psychologist, and a member of the clergy, but less than 15% of respondents selected all of these three choices. Therefore, a primary care provider or an individual who specializes exclusively in mental health were the preferred option for mental healthcare (Mickus et al., 2000). This thesis will determine if undergraduate students also prefer a primary care provider for mental health treatment or if they prefer a different provider.

The likelihood to utilize health care services may differ across genders. Bertakis, Azari, Helms, Callahan, and Robbins (2000) studied the utilization of a university medical center by new adult patients (N=509) over a year. Demographic information and self-reported health status was collected. An exit interview was also conducted to measure health status at the end of the study. The results of this study showed that women had a much higher number of visits to the

university medical center compared to men (Bertakis et al., 2000). This study shows that women are more likely than men to utilize health services. However, the average age of these participants were in their forties, so this thesis will determine if this trend extends to the undergraduate population.

Parent/Guardian Involvement in Health Decisions and Health Outcomes

The involvement of a parent or guardian can have significant outcomes on a student's health. Undergraduate students communicating with their parents about their health has been shown to decrease risky health behaviors such as unprotected sex and heavy consumption of alcohol (Bylund et al., 2005). Immediate family members have also been shown to be one of the primary influences in an individual's health lifestyle changes (Birch et al., 1997). Therefore, involvement of parents/guardians in college student health decisions should be studied to improve overall health of college students.

Undergraduate students frequently use parents as a source of health-related information. The American College Health Association surveys undergraduate students yearly to determine general health statuses, common health impediments, sources of health-related information, sexual health, and drug use information. The spring 2007 survey had 71,680 student participants across the United States. This study found that parents were the most used source of health information, with 74.6% of students stating that they use parents for health information. However, students did not rank their parents as the most believable source of health information; parents were the third most believable source, with 65.6% of students listing their parents as believable (American College Health Association, 2008). It is evident that although college students do not necessarily believe all health-information that they receive from their parents, they are frequently involved in undergraduate student health.

However, a student's likelihood to ask a parent for advice may vary for different illness states, such as sexual health. A study conducted in California compared the support systems for heterosexual and sexual-minority female college students for sexual health issues. Participants (N=299) answered demographic questions and open-ended experience questions with social support measures. The study revealed that college women were more likely to seek advice about sexual health from a friend rather than a parent. Around 51% of the participants had actually never asked a parent for support about any sexual issues. However, since the study only had female participants, it does not represent the likelihood of other genders to speak with their parents about sexual health (Friedman & Morgan, 2008). There is a lack of current literature about the likelihood of men to seek advice for sexual health from parents. This thesis will study all undergraduate students, including men and individuals with other gender identities, to see if this trend extends to other genders.

Students may also be hesitant to address mental health with parents/guardians to avoid worrying them. An interview-based study in the UK interviewed 20 university students and asked each participant questions regarding how they defined mental health, what mental health issues students are facing, and where students seek help for mental health. All students were asked to answer the questions from the viewpoint of the general student population rather than their personal experience to avoid any pressure to reveal personal information. Most participants reported that they would seek help from someone that they know well, but some are hesitant to tell their families because they do not want to worry their parents (Laidlaw et al., 2015). Therefore, students may be less likely to tell parents about mental health issues when compared to illness states such as COVID-19 or a chronic condition.

Undergraduate students also differ in the frequency they communicate with their parents/guardians. Small, Morgan, Abar, and Maggs (2011) studied 746 first-year undergraduate students. Each student completed a survey for 14 days that asked about the frequency of communication with parents, amount of alcohol consumed on each day, amount of time spent drinking alcohol, and about any consequences they experienced from drinking such as passing out or not completing schoolwork. The results showed that females were more likely than males to communicate with their parents both on weekends and on weekdays (Small et al., 2011). Although this study does not indicate if females will be more likely than males to share health-related information, it does show that there may be a significant difference in the frequency that undergraduate men and women communicate with their parents/guardians.

Hypotheses

Hypothesis: Personality, HLOC, and Gender on Preferences of SDM

Three different personality factors were assessed in the proposed study. These included openness, introversion, emotional stability. The dependent variable was participants' preferences for SDM. Based on research by Flynn and Smith, it is expected that individuals who have higher levels of openness will prefer to be more involved in the SDM process (2007). Based on the correlation between emotional stability and good overall health status, it is expected that emotional stability will lead to a more active role in SDM (Johnson et al., 2009). Based on research by Khalil that showed introversion leading to decreased involvement in non-health related SDM, it is expected that introversion will lead to a decreased amount of involvement in SDM (2016).

H1: Individuals with higher levels of openness will want a more active role in the SDM process.

H2: Individuals with higher levels of emotional stability will want a more active role in the SDM process.

H3: Individuals with higher levels of introversion will want a less active role in the SDM process.

Three different types of HLOC were assessed in this study. These included internal HLOC, powerful other HLOC, and chance HLOC. The dependent variable is participants' preferences for SDM. Based on research by Braman and Gomez, it is expected that individuals with a powerful other HLOC will prefer a less active role in the SDM process (2004). It is also expected that individuals with chance HLOC will have a less active role in SDM based on the correlation between chance HLOC and not trusting physicians (Brincks et al., 2010). Based on the hypotheses of Braman and Gomez (2004) and Marton (2020), it is expected that individuals with an internal HLOC will prefer a more active role in SDM.

H4: Individuals with higher levels of powerful others HLOC will want a less active role in the SDM process.

H5: Individuals with higher levels of chance HLOC will want a less active role in the SDM process.

H6: Individuals with higher levels of internal HLOC will want a more active role in the SDM process.

Gender was also assessed in the current study in terms of SDM. The independent variable is the gender of the individual, and the dependent variable is how active they prefer to be in the SDM process. Based on the research by Levinson, Kao, Kuby, and Thisted, it is expected that women will prefer a more active role in SDM than men (2005). These results were further supported by a narrative review by Say (2018).

H7: Women will want a more active role in the SDM process than men.

Hypothesis: Preferred Healthcare Provider and Illness state

Preferred healthcare provider was evaluated using two different variables: illness state and provider type. Illness state consisted of six different illnesses (mental health, minor condition, sexual health, COVID-19, serious condition, chronic condition), and provider consisted of five different provider types: Primary Care Physician, Nurse Practitioner (NP), Nurse, Physician's Assistant (PA), and Specialist (ex. therapist, psychiatrist, psychologist). For each illness state, participants indicated how likely they would seek care from each of the providers. Based on the research by Larkin and Hooker, it is expected that patients will prefer to see a doctor over a nurse practitioner or physician's assistant due to the respondent's perceived view of their knowledge or education (2010). This perception could also be extended to nurses. Based on research by Lewis, doctors are typically preferred over specialists except for serious illness states, new illness states, or sexual health (2000). This preference for specialists for certain illness states was further supported by research by Mickus (2000). Therefore, it is expected that a doctor will be the most preferred provider, and a specialist will be the next most preferred provider. Based on the research by Bertakis (2000), women will be more likely than men to access health care services.

H8: Compared to all others, participants would prefer to see a primary care physician for all illness states.

H9: It is expected that participants will seek help for serious conditions more than minor conditions.

H10: It is expected that gender, illness state, and provider type will interact with one another, and that provider type for each illness state will vary for men and women.

H11: It is expected that women will be more likely to seek help for their illness states than men.

Hypothesis: Health-Related Communications with Parents/Guardians

The first independent variable was illness state with 6 different levels: mental health, minor condition, sexual health, COVID-19, serious condition, chronic condition. The second independent variable was the level of health concern with two different levels: symptoms/concerns versus diagnosis/treatment. The dependent variable was the likelihood of sharing information with their parents/guardians. Based on research by the American College Health Association, it is expected that students will be highly likely to share information about a chronic condition, COVID-19, or a serious condition (2008). Research in the UK showed that university students had mixed opinions on sharing mental health information with their parents, so it is expected that it will be moderately likely that students will share this information with their parents (Laidlaw et al., 2015). Based on research by Friedman and Morgan (2008), it is not likely that students will share information with their parents/guardians regarding their sexual health or minor health issues. Small, Morgan, Abar, and Maggs (2011) showed that undergraduate female students communicate more frequently with their parents/guardians than male students. Although this does not directly correlate to health-related communication, females may be more likely than males to share health-related information with their parents/guardians since they communicate with them more frequently.

H12: Participants will be more likely to share information about a diagnosis/treatment with their parents/guardians than for concerns/symptoms.

H13: Participants will be more likely to share information about a serious illness state with their parents/guardians than for minor illness states.

H14: Gender will interact such that females will be more likely than males to share health-related information with their parents/guardians.

Methods

Participants

This study focused on undergraduate college students. Participants were recruited at Bellarmine University through e-mails, Moodle, or Teams announcements. Professors were asked to share the recruiting script with their students. Honors students were also requested to participate through email. Participants may have received extra credit for participating but were not compensated or paid for participating, and participation was fully voluntary. Each participant completed a consent form on SurveyMonkey prior to the completion of the survey. This study took 10-15 minutes to complete. The study was reviewed and approved by Bellarmine University's Internal Review Board.

A total of 216 students completed the survey. Twenty three of the participants were removed from data analysis due to incomplete surveys. The youngest participant of this survey was 18 years old, and the oldest participant was 52 years old. Two additional participants were excluded from this study because this thesis is focused on studying traditionally-aged college students. A majority of the 191 participants were White (n=160), and the remaining participants were Black (n=14), Mixed Race (n=8), Asian (n=6), or Hispanic (n=3). A majority of the participants were females (77.2%), and the remaining participants were male (18.1%) or non-binary (4.1%). Around 1/5 (19.9%) of the participants had a medical condition that required ongoing medical treatment such as diabetes, asthma, or a chronic condition. A majority of participants had health insurance (97.9%), and most of the students with health insurance used their parent/guardian's health insurance (91.1%). Students rated their overall physical health as

3.571 on a five-point Likert scale, and rated their current mental health as 2.665 on a 5-point Likert scale (see Table 1).

Design

To examine the hypotheses, the study used both experimental and correlational designs to understand undergraduates' preferences for shared decision making. A series of regressions were used to examine the effects of the personality variables on shared decision making. The study also used a 5 (HCP) X 6 (Illness state) X 2 (Gender) mixed design with repeated measure on HCP and Illness State to examine who undergraduate prefer to be treated by. Finally, the study used a 2 (Parent/Guardian Health Communication) X 6 (Illness state) X 2 (Gender) mixed design with repeated measures on both Parent/Guardian Health Communication and illness state, to examine health communication with parents/guardians. The six illness states were mental health, serious conditions, sexual health, COVID-19, chronic health conditions, and minor health conditions. For the study, a cross-sectional design was used where participants completed an online questionnaire via SurveyMonkey. The measured used are described below and found in Appendix A.

Materials

Background Information

The background information section of this survey asked each participant for their age, gender, race/ethnicity, and presence of an ongoing health condition. It also asked students to list if they have health insurance, if they used their parent's health insurance, and to rank their overall physical and mental health status on a 5-point Likert scale (1= Poor, 2=Fair, 3=Good, 4=Very Good, 5=Excellent).

Shared Decision Making

The Healthcare SDM Scale developed by Krantz, Baum, and Wideman (1980) was used for this study. The study was slightly adapted to change any reference of doctor or nurse listed in the original study to “healthcare professional”. There are a total of 16 questions on this scale. The scale assesses two different concepts. The first subscale included 7 questions and measured the participant’s preference for information through statements such as, “I usually don’t ask the doctor or nurse many questions about what they’re doing during a medical exam.” This subscale had a Cronbach’s α of .773. The second subscale included 9 questions that assessed preferences for behavioral involvement through statements such as, “Except for serious illness, it’s generally better to take care of your own health.” This subscale had a Cronbach’s α value of .769. For both subscales, participants were asked to rank each statement on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The overall SDM scale had a Cronbach’s α of .719. Scores for each subscale were completed by calculating the mean for the items on each scale. The overall means was computed by calculating the mean across all 16 items. On the scales, higher scores meant the participants preferred more active involvement in SDM.

Personality

The Hershey and Mowen personality scale (2000) was used to measure emotional stability, introversion, and openness. The subscales regarding “need for material resources” and “need for arousal” were removed from the personality scale since they do not correlate to SDM. The revised scale had a total of 10 questions. For each question, participants were asked to rate how well the question described them using a nine point scale (1 = Never, 9 = Always). To calculate the scores, the responses on each subscale were averaged. Each scale is described below. Scale scores were determined by averaging the responses for each subscale. Higher scores meant that the participants experienced higher levels of that personality trait.

Emotional stability was the first subscale and included 4 different statements to assess it such as “Testy more than others” and “Emotions go way up and down.” This subscale had a Cronbach’s α value of .852. Introversion was assessed using three statements. One example asked participants, “Quiet when with people.” This subscale had a Cronbach’s α value of .876. Openness to experience was assessed using three statements. One example asked participants, “More original than others.” This subscale had a Cronbach’s α value of .807.

Health Value Scale

The Health Value Scale developed by Lau, Hartman, & Ware (1986) was used for this study. The scale included 4 statements that each measured overall health value through statements such as, “If you don’t have your health, you don’t have anything.” Participants ranked how strongly they agreed with each statement on a 5-point Likert scale (1= Strongly Disagree; 5=Strongly Agree). This scale had a Cronbach’s α value of .670. The scale was scored by calculating the mean for all responses. Higher scores meant that participants more highly valued their health.

HLOC Scale

The multidimensional HLOC scale Form A developed by Wallston, Wallston, and DeVellis (1978) was used for this study. This scale had a total of 18 statements, with 6 statements for each respective subscale. Participants were asked to rate how strongly they agree with each statement using a six point scale (1=Strongly Disagree; 6=Strongly Agree). Scores for each subscale were determined by calculating the means for the items on each respective scale. On each subscale, higher scores mean that the participant more strongly expresses that type of HLOC.

Internal HLOC was assessed using six statements. One example asked participants, “If I get sick, it is my own behavior which determines how soon I will get well again.” This subscale had a Cronbach’s α value of .739. Powerful Others HLOC was assessed using six statements. One example asked participants, “Having regular contact with my physician is the best way for me to avoid illness.” This subscale had a Cronbach’s α value of .656. Chance HLOC was assessed using six statements. One example asked, “No matter what I do, if I am going to get sick, I will get sick.” This subscale had a Cronbach’s α value of .712.

Parent/Guardian Healthcare Communication

In order to assess undergraduate students’ preferences for sharing health related information with their parents/guardians, two sets of questions were created. One assessed how likely they were to share health-related concerns and symptoms and the other focused on health-related diagnoses or treatments. They were asked to evaluate each question (symptoms vs diagnosis) for the six different illness states defined above.

Symptom Communication. The first variable to assess communication with parents was used to determine the likelihood that participants will tell a parent or guardian about concerns or symptoms about 6 different illness states defined above. Each illness state had the same general question, “How likely are you to tell your parents or legal guardians about **CONCERNS AND SYMPTOMS** of the following illness states?” followed by a list of each of the illness states. Participants then ranked their likelihood of telling a parent/guardian about concerns or symptoms for each illness state on a five point scale (1=Very Unlikely; 5=Very Likely).

Diagnosis and Treatment Communication. The second variable created was used to determine the likelihood that participants will tell a parent or guardian about diagnosis or treatment for 6 different illness states defined above. Each illness state had the same general

question, “How likely are you to tell your parents or legal guardians about a **DIAGNOSIS or TREATMENT** for the following illnesses or conditions? followed by a list of each of the illness states. Participants then ranked their likelihood of telling a parent/guardian about diagnosis or treatment for each illness state on a 5-point Likert scale (1=Very Unlikely; 5=Very Likely). Scores for each scale were determined by calculating the mean for the items on each scale. On these two scales, higher scores meant that the participant was more likely to tell their parent/guardian about an illness state.

Healthcare Provider Preference

This variable was created for this study to determine how likely participants were to seek advice from 5 different healthcare providers: a primary care physician (PCP), nurse practitioner (NP), physician assistant (PA), nurse (N), or a specialist. This variable was crossed with illness state to create a series of different health care provider scenarios. For each illness state, they were asked how likely they were to use each provider. For example, for 6 different illness states defined above. This was assessed through statements such as, “If seeking help for mental health treatment (ex. anxiety, depression), how likely would you be to seek advice from: Primary Care Physician, Nurse Practitioner (NP), Nurse, Physician’s Assistant (PA), and Specialist (ex. therapist, psychiatrist, psychologist).” All of the providers remained the same for each illness state except for the specialist which varied. Participants then ranked their likelihood of seeking help from each healthcare professional for each illness state on a five point scale (1=Very Unlikely; 5=Very Likely).

Procedure

After obtaining IRB approval, Bellarmine professors through the Psychology Department, Biology Department, and Honors program were contacted and asked to discuss the

study with their students. Extra credit could also be offered for participation in the study. The study was conducted online through SurveyMonkey. Once they clicked on the link, they were taken to the consent form. They were instructed to read the consent and click next if they wanted to proceed with the student. The consent form did not ask for signatures, and neither the survey, consent form, nor secondary survey collected IP addresses to maintain the anonymity of each participant. Participants first completed questions about their demographics, background, health insurance, and health status. The participants then completed a SDM scale, personality scale, health value scale, and HLOC scale. The participants then completed a scale about the likelihood of telling parents/guardians about both concerns/symptoms and diagnosis/treatment for six different illness states. They then completed a Healthcare Provider Preference scale for each of six illness states. Students also completed an optional secondary survey that was not linked for their first survey to collect their name and class for extra credit. Students were able to complete the study from March 1-March 15, 2021.

Once the data were collected, the data were reviewed for completeness. Participants who were missing significant portions of data were removed from the data set. The data was then prepared for analysis. Specifically, items that were reverse coded were reserved and scale scores were computed. All analysis were conducted in SPSS.

Results

All data was entered into SPSS. SDM preferences were analyzed using multiple regressions, where the predictors were gender, personality, and HLOC. The likelihood of participants telling their parents/guardians about concerns/symptoms of different illness states was analyzed using a one-way ANOVA, where illness state is the independent variable. The likelihood of participants telling their parents/guardians about diagnosis/treatment of different

illness states was analyzed using a one-way ANOVA, where illness state is the independent variable. The role of illness state and healthcare provider on seeking treatment was analyzed using a two-way ANOVA, where healthcare provider type and illness state act as separate independent variables.

SDM Regression Results

For SDM, three regression models were analyzed. For each model, internal HLOC, chance HLOC, powerful others HLOC, openness, introversion, and emotional stability were entered as predictors. The following analyses addressed H1-H7. With respect to the informational scale of SDM, the overall regression model was significant ($F(6, 183) = 8.76, p < .01$). Four significant predictors emerged (see Table 2, Figure 1): introversion, openness, internal HLOC, and chance HLOC. Inspection of the regression coefficients revealed that with increasing openness and internal HLOC, participants reported higher levels for their preferences of informational SDM. Inspection of the regression coefficients also revealed that with increasing levels of introversion and chance HLOC, participants reported lower levels for their preferences of informational SDM. In total, 22% of the variability in informational SDM was explained (see Table 2). For informational SDM, women ($M=2.993, SD=0.711$) were more likely than men ($M=2.966, SD=0.735$) to prefer a more active role in SDM (see Table 3).

With respect to the behavioral scale of SDM, the regression model was significant, ($F(6, 183) = 11.93, p < .01$) (see Table 2, Figure 2). Two significant predictors emerged (see Table 2): powerful others HLOC and chance HLOC. Inspection of the regression coefficients revealed that with increasing chance HLOC, participants reported higher levels for their preferences of informational SDM. Inspection of the regression coefficients also revealed that with increasing levels of powerful others HLOC, participants reported lower levels for their preferences of

behavioral SDM. In total, 28% of the variability in behavioral SDM was explained (see Table 2). For behavioral SDM, women ($M=2.842$, $SD=0.494$) were also more likely than men ($M=2.706$, $SD=0.474$) to prefer a more active role in SDM (see Table 3).

With respect to overall SDM, the regression model was significant ($F(6, 183) = 7.57$, $p < .01$). Three significant predictors emerged (see Table 2, Figure 3): openness, internal HLOC, and powerful others HLOC. Inspection of the regression coefficients revealed that with increasing openness and internal HLOC, participants reported higher levels for their preferences of informational SDM. Inspection of the regression coefficients also revealed that with increasing levels of powerful others HLOC, participants reported lower levels for their preferences of behavioral SDM. In total, 20% of the variability in overall SDM was explained (see Table 2). For overall SDM, women ($M=2.908$, $SD=0.475$) were more likely than men to prefer a more active role in SDM ($M=2.772$, $SD=0.411$) (see Table 3).

Preferred Healthcare Provider

Preferred healthcare provider was analyzed using a 5 (HCP) X 6 (Illness States) X 2 (Gender) mixed ANOVA, with repeated measures on HCP and illness state. The analyses revealed a significant main effect of illness state, $F(20, 3640) = 25.281$, $p = .001$ and HCP, $F(4, 692)$, $p = .001$. Gender was not significant, $F(1, 173) = 0.001$, $p = .984$ (see Table 4). The most preferred healthcare providers were a primary care physician ($M=4.088$, $SD=0.663$) and a specialist ($M=4.057$, $SD=0.732$), and these values did not significantly differ from one another. The least preferred healthcare providers were a nurse ($M=3.444$, $SD=0.898$) and a physician assistant ($M=3.462$, $SD=0.898$), and these values did not significantly differ from one another (see Table 5, Figure 4). This analysis addressed H8. Participants were most likely to seek help for a serious condition ($M=4.108$, $SD=0.746$) and were least likely to seek help for mental

health ($M=3.088$, $SD=0.954$) (see Table 5, Figure 5). This analysis addressed H9. However, many mental health issues, especially anxiety and depression, affect college students at higher rates than the general population (Pedrelli et al., 2015). Colleges and universities must find ways to increase the use of mental health services on campus such as reducing cost, reducing stigma, or increasing awareness of on-campus or community services.

However, these two significant main effects were overshadowed by a two-way interaction found between HCP and illness state, $F(20, 3640)=25.281$, $p = .001$. These were all overshadowed by a 3-way interaction found between HCP, illness state, and gender, $F(20) 2.478$, $p = .001$ (see Table 4). This analysis addressed H10.

To decompose this 3-way interaction, a 2-way HCP x illness state was analyzed separately for men and women. The analysis for women showed effects for HCP, $F(4,568)=54.028$, $p = .001$, and illness state, $F(5, 710)=57.620$, $p=.001$. There was also a two-way interaction between HCP and illness state, $F(20, 2840)= 53.871$, $p = .001$ (see Table 6). For this analysis, preferred HCP was examined based on each illness (see Table 7, see Figure 6). Bars denoted with the same letter indicate that their values are not significantly different.

Results revealed that for mental health, women most strongly preferred to see specialist ($M=4.406$, $SD=0.929$), and women were least likely to prefer seeing a physician assistant ($M=2.559$, $SD=1.185$). For a serious condition, women most strongly preferred to see primary care provider ($M=4.504$, $SD=0.759$), and women were least likely to prefer seeing a nurse ($M=3.748$, $SD=1.078$). For sexual health , women most strongly preferred to see a specialist ($M=4.678$, $SD=0.667$), and women were least likely to prefer a physician assistant ($M=3.518$, $SD=1.125$). For COVID-19, women most strongly preferred to see primary care provider ($M=4.413$, $SD=0.867$), and women were least likely to prefer seeing a nurse ($M=3.835$,

$SD=1.096$). For a minor condition, women most strongly preferred to see primary care provider ($M=3.956$, $SD=1.294$), and women were least likely to prefer seeing a specialist ($M=2.587$, $SD=1.489$). For a chronic health condition, women most strongly preferred to see primary care provider ($M=4.497$, $SD=0.730$), and women were least likely to prefer seeing a nurse ($M=3.511$, $SD=1.162$) (see Table 7).

The analysis for men showed the main effects of HCP, $F(4,124)=11.638$, $p = .001$, and illness state, $F(20, 620)= 4.993$, $p = .001$. There was also a two-way interaction between HCP and illness state, $F(20, 620)=4.994$, $p = .001$ (see Table 6). Similar to women, to decompose the two-way interaction, preferred HCP was examined based on each illness (see Table 7, see Figure 7).

For mental health, men most strongly preferred to see specialist ($M=4.250$, $SD=1.047$), and men were least likely to prefer seeing a physician assistant ($M=2.531$, $SD=1.295$). For a serious condition, men most strongly preferred to see a specialist ($M=4.469$, $SD=0.842$). Men were least likely to prefer seeing a physician assistant ($M=4.000$, $SD=0.984$). For sexual health, men most strongly preferred to see a specialist ($M=4.469$, $SD=0.842$), and men were least likely to prefer seeing either a nurse ($M=3.406$, $SD=1.316$) or a physician assistant ($M=3.406$, $SD=1.136$). Their likelihood to prefer seeing a nurse or a physician assistant was identical. For COVID-19, men most strongly preferred to see primary care provider ($M=4.094$, $SD=2.376$) or a specialist ($M=4.094$, $SD=1.422$). The likelihood to prefer seeing either a primary care provider or a specialist was identical. Men were least likely to prefer seeing a physician assistant ($M=3.750$, $SD=1.391$). For a minor condition, men most strongly preferred to see primary care provider ($M=3.781$, $SD=1.431$), and men were least likely to prefer seeing a specialist ($M=3.219$, $SD=1.641$). For a chronic health condition, men most strongly preferred to see

primary care provider ($M=4.375$, $SD=0.751$). Men were least likely to prefer seeing a physician assistant ($M=3.656$, $SD=1.153$) (see Table 7).

Men were more likely to seek healthcare for mental health ($M=3.131$, $SD=0.950$), a serious condition ($M=4.238$, $SD=0.713$), a minor condition ($M=3.450$, $SD=1.171$), and a chronic condition ($M=4.013$, $SD=0.775$). Women were more likely than men to seek healthcare for sexual health ($M=3.923$, $SD=0.813$) and COVID-19 ($M=4.036$, $SD=0.909$). All analyses for men and women individually addressed H11.

Health-related Communications with Parents/Guardians

The likelihood of undergraduate students telling their parents/guardians about different illness states was analyzed using a 2 (parent/guardian health state communication) X 5 (HCP) X 2 (Gender) mixed analysis of variance, with both illness state and level of health concern as repeated measures. The results revealed a significant main effect for the level of health concern $F(1,178)=10.314$, $p=.002$, and illness state, $F(5, 890)=95.548$, $p=.001$ (see Table 9). No two-way or three-way interactions were seen. Participants were more likely to tell their parents/guardians about diagnosis/treatment of an illness state ($M=3.921$, $SD=0.993$) than for concerns/symptoms ($M=3.818$, $SD=1.006$) (see Table 10, Figure 8). This analysis addressed H12.

The illness state where participants were most likely to tell their parent/guardian for symptoms/concerns was COVID-19 ($M=4.537$ $SD=1.181$). The illness state where participants were most likely to tell their parents/guardians about a diagnoses/treatment was also COVID-19 ($M=4.517$, $SD=1.100$). The illness state where participants were least likely to tell their parents about concerns/symptoms was sexual health ($M=2.443$, $SD=1.771$). The illness state where participants were least likely to tell their parents/guardians about diagnosis/treatment was also sexual health ($M=2.558$, $SD=1.892$). This analysis addressed H13 (see Table 10, Figure 9).

The overall likelihood of men or women telling their parents/guardians about concerns/symptoms or diagnosis/treatment was also assessed. For concerns/symptoms, women ($M=3.874$, $SD=0.859$) were more likely to tell their parents/guardians about their health than men ($M=3.763$, $SD= 1.811$). For diagnosis/treatment, women ($M=4.018$, $SD=0.845$) were also more likely to tell their parents/guardians about their health than men ($M=3.823$, $SD=0.798$). These results addressed H14 (see Table 11).

Discussion

Undergraduate students' unique health concerns, their frequent use of a parent's or guardian's health insurance, and their reliance on on-campus health services makes them an important population to study for healthcare. By better understanding how health locus of control and personality predictors influence SDM, healthcare providers can learn the best manner to communicate with their patients. Understanding the preferred HCP for varying illness states is important, especially for colleges, so they can better equip on-campus health services with providers that students would prefer to see. Lastly, understanding what health-related information students share with their parents/guardians and how this varies by illness state is important since this communication has been closely tied to positive health statuses.

Predictors on Preferences of SDM

The first hypothesis (H1) stated that, "Individuals with higher levels of openness will want a more active role in the SDM process." The informational subscale of SDM revealed that with increasing levels of openness, participants reported higher levels for their preferences of informational SDM. Openness was not seen as a significant predictor for the behavioral SDM subscale. Openness was significant for the overall SDM and increasing levels of openness were

correlated with higher levels for their preferences of overall SDM (see Table 2). These results support H1 and the previous research done by Flynn and Smith (2007).

The second hypothesis (H2) stated that, “Individuals with higher levels of emotional stability will want a more active role in the SDM process.” Emotional stability was not seen as a significant predictor for SDM for the informational subscale, behavioral subscale, or for overall SDM. Previous studies have shown that emotional intelligence, an aspect of emotional stability, is correlated with general health status (Johnson et al., 2009). Further studies should be conducted to see why emotional stability is correlated to a positive health status and if emotional stability is a predictor of SDM for older adults.

The third hypothesis (H3) “Individuals with higher levels of introversion will want a less active role in the SDM process.” Introversion was found to be significant for the information SDM subscale. The regression coefficient showed that for increasing levels of introversion, participants reported lower levels for their preferences for informational SDM (see Table 2). Therefore, these results support H3. Although the connection between health-related SDM and introversion has not been frequently studied, some research has shown that introversion and non-health related SDM are negatively correlated. The results from this study help to bridge the gap between potential connections between different types of SDM.

The fourth hypothesis (H4) stated that, “Individuals with higher levels of powerful others HLOC will want a less active role in the SDM process.” Powerful locus of control was a significant predictor for behavioral and overall SDM. Powerful others HLOC was negatively correlated to active involvement in behavioral and overall SDM (see Table 2). These results support the hypothesis and show a negative correlation between powerful others HLOC and SDM. Previous research that has studied the connection between powerful others HLOC and

SDM has also shown that they are negatively correlated (Braman & Gomez, 2004). This study extends this preexisting trend to the undergraduate student population, which is not as frequently studied. Further studies should assess why undergraduates might have a powerful others HLOC and how to promote an internal HLOC.

The fifth hypothesis (H5) stated that, “Individuals with higher levels of chance HLOC will want a less active role in the SDM process.” Chance HLOC was found to be a significant predictor for both informational SDM and behavioral SDM but not for overall SDM. For increasing levels of chance HLOC, participants reported lower levels of informational SDM but higher levels of behavioral SDM (see Table 2). The results for informational SDM support the hypothesis by showing this preference for a less active role. However, the results for behavioral SDM did not support the hypothesis. Brincks showed that there is a positive correlation between chance HLOC and not trusting physicians (2010). Since individuals with higher levels of chance HLOC do not trust physicians, it is possible that it would cause them to be less interested in listening to information about their condition from their health care providers. However, not trusting physicians also might make these individuals want to be more involved in their treatment or further steps because they do not trust the physician to make the correct decisions. Since being involved in the SDM is correlated to positive health statuses, colleges should assess why students might have a chance HLOC such as stress, lack of healthy or affordable food on campus, and other factors that might be impeding their health.

The sixth hypothesis (H6) stated that, “Individuals with higher levels of internal HLOC will want a more active role in the SDM process.” Internal HLOC was seen to be a significant predictor for informational SDM and for overall SDM. In both cases, for increasing levels of internal HLOC, participants reported higher levels of SDM (see Table 2). Therefore, these results

support the hypothesis. This positive correlation between internal HLOC and SDM has been previously seen in studies by both Braman & Gomez (2004) and by Marton (2020). However, these studies had significantly older participants, so this study shows this trend may extend to the undergraduate student population.

The results for HLOC may have been impacted by each individual's level of health value. A study done by Wallston, Kaplan, and Maides (1976) had 98 college students with hypertension complete a HLOC scale, Rotter's internal-external HLOC scale, and rate their health value. Participants would also read a scenario regarding the risks associated with hypertension and more information about hypertension. Each participant then had to choose which pamphlets about hypertension they would want, which measured their level of information seeking. Participants who had a higher rating of health value were more likely to seek out more information. The results showed that HLOC or health value when treated as separate variables could not predict the amount of information seeking. However, when HLOC and health value were considered together, it could predict the amount of information participants preferred (Wallston et al., 1976). Since HLOC appears to only be significant when you have a high health value, then the results between HLOC and SDM might not be as accurate for individuals with a low health value.

Gender and SDM

The seventh hypothesis (H7) stated that, "Women will want a more active role in the SDM process than men." Women were more likely to prefer an active role in informational SDM, behavioral SDM, and overall SDM (see Table 3). These results support H7. This also supports studies by Levinson, Kao, Kuby, and Thisted (2005) also showed that women were more likely than men to prefer SDM. Further studies could assess why females prefer a more

active role than men and how to encourage men to be more involved in the SDM process. Since undergraduate men were less likely than undergraduate women to prefer to be involved in SDM, healthcare providers on college campuses could encourage students, especially men, to be involved in the informational and decision making process when discussing an illness state.

Preferred Healthcare Provider

The eighth hypothesis (H8) stated that “Compared to all others, participants would prefer to see a primary care physician for all illness states.” It was found that the most preferred healthcare providers were either a primary care provider ($M=4.088$, $SD=0.663$) or a specialist ($M=4.057$, $SD=0.732$) (see Table 5). Although the preference for a primary care provider was slightly higher, there was no significant difference found across these two provider types (Figure 4). Since the primary care provider was rated as the most preferred health care provider, this supports H8. Previous research, which has primarily focused on older populations, has shown that primary care providers are often preferred over nurse practitioners and physician assistants due to the perception that primary care providers have increased knowledge (Larkin and Hooker, 2000). Based on this perception of knowledge, this trend could also extend to nurses, who typically have less years of formal education than primary care providers. Primary care providers were also seen to be preferred over specialists except for specific illness states, which further supports that specialists would not usually be more preferred than primary care providers (Mickus et al., 2000). Therefore, this study extends previous research that primary care providers are usually preferred over other healthcare providers.

The ninth hypothesis (H9) stated that, “It is expected that participants will seek help for serious conditions more than minor conditions.” The results support this hypothesis since students were most likely to seek help for a serious condition ($M=4.108$, $SD=0.746$), COVID-19

($M=4.004$, $SD=0.912$), and a chronic condition ($M=3.983$, $SD=0.788$). This supports the preexisting literature for each illness state, which is described below. The following information is focused on the 3-way interaction between HCP, illness state, and gender.

For minor conditions, men were most likely to prefer a primary care provider ($M=3.871$, $SD=1.431$), nurse practitioner ($M=3.531$, $SD=1.436$), or a nurse ($M=3.438$, $SD=1.501$) for a minor condition (Table 7). Although the preference for primary care provider was slightly higher, there was no significant difference found across these three provider types (Figure 7). Women were most likely to prefer a primary care provider ($M=3.956$, $SD=1.294$) (see Table 7). These results were expected based on research by Larkin and Hooker that showed that patients often prefer a provider that they view has the most knowledge or education (2010).

For mental health conditions, men were most likely to prefer a specialist ($M=4.250$, $SD=1.047$) for a mental health condition. Women were also most likely to prefer to see a specialist ($M=4.406$, $SD=0.929$) (see Table 7). Lewis (2000) showed that the illness states where a specialist may be preferred are for matters of sexual health, serious illness states, and new illness states, but it did not show that participants would prefer a specialist for mental health conditions. However, the participants in Lewis' study were significantly older ($M=55$ years) than the participants in this study ($M=20.09$). This older population may have faced increased stigma for accessing mental health resources, such as specialists, than this younger population (Conner et al., 2010).

For sexual health conditions, men were most likely to prefer seeing either a primary care provider ($M=4.063$, $SD=1.190$) or a specialist ($M=4.250$, $SD=1.136$) (see Table 7). Although the preference for a specialist was slightly higher, there was no significant difference found across these provider types (Figure 7). Women most strongly preferred to see a specialist ($M=4.678$,

$SD=0.667$) (see Table 7). These results also support the previous research by Lewis that showed the specialists may be preferred for sexual health issues (2000).

For COVID-19, men were most likely to prefer to see either a primary care provider ($M=4.094$, $SD=1.376$), a specialist ($M=4.094$, $SD=1.422$), or a nurse practitioner ($M=3.875$, $SD=1.385$) for COVID-19 (see Table 7). The preference to see a primary care provider or a specialist for COVID-19 was identical for men, but there was no significant difference found across a primary care provider, specialist, or nurse practitioner (see Figure 7). Women most strongly preferred to see a primary care provider for COVID-19 ($M=4.413$, $SD=0.867$) for COVID-19 (see Table 7).

For a serious condition, men were most likely to prefer to see either a primary care provider ($M=4.438$, $SD=0.716$) or a specialist ($M=4.469$, $SD=0.842$) (see Table 7). Although the preference for a specialist was slightly higher, there was no significant difference found across these provider types (see Figure 7). Women most strongly preferred to see a primary care provider for a serious condition ($M=4.504$, $SD=0.759$) for a serious condition (see Table 7). The male participants supported the study by Lewis (2000) that showed specialist is preferred for a serious condition. However, female participants did not support this study since they preferred to see a primary care provider. Potential reasons for females preferring a primary care provider over a specialist for a serious condition has not been clearly studied, but it could be to differences in how males and females view the knowledge of different healthcare providers.

For a chronic condition, men were most likely to prefer to see either a primary care provider ($M=4.375$, $SD=0.751$) or a specialist ($M=4.219$, $SD=1.099$) for a chronic condition (see Table 7). Although the preference for a primary care provider was slightly higher, there was no significant difference found across these provider types (see Figure 7). Women also most

strongly preferred to see either a primary care provider ($M=4.497$, $SD=0.730$) or a specialist ($M=4.371$, $SD=1.005$) (see Table 7). The preference to see a primary care provider was also slightly higher, but there was no significant difference found across the provider types (see Figure 6). The lack of preference between a primary care provider and a specialist could be because college students are less likely to have a chronic condition than older adults. In this thesis, 19.9% of participants had a medical condition that required ongoing treatment (see Table 1), which is similar to previous studies that show around 20% of young adults have a chronic condition (Lemly et al., 2014). Since a majority of the participants did not have a chronic condition, this could explain the lack of preference for a specialist to treat a chronic condition.

The eleventh hypothesis (H11) stated that, “It is expected that women will be more likely to seek help for their illness states than men.” However, women were only more likely to see health care for sexual health and COVID-19 compared to men (see Table 8). This does not support the hypothesis or the previous study by Bertakis (2000) with older adults that shows that women will be more likely than men to access health care services. Further studies should be done to assess if and why undergraduate women are less likely to access healthcare than their male counterparts.

Health-Related Communication with Parents/Guardians

The twelfth hypothesis (H12) stated that, “Participants will be more likely to share information about a diagnosis/treatment with their parents/guardians than for concerns/symptoms.” This hypothesis was supported by the means of diagnosis/treatment of an illness state ($M=3.921$, $SD=0.993$) and for concerns/symptoms ($M=3.818$, $SD=1.006$) (see Figure 8). A study by Laidlaw (2015) showed that some students avoid telling their parents about mental health issues to avoid worrying them. It is possible that this rationale could also be

extended to why students do not want to tell their parents about an illness state unless it is confirmed. However, students telling their parents/guardians about a health condition earlier could push them to seek out healthcare and treatment for an illness state.

The thirteenth hypothesis (H13) stated that, “Participants will be more likely to share information about a serious illness state with their parents/guardians than for minor illness states.” This hypothesis was supported because students were the most likely to tell their parents/guardians about concerns/symptoms for COVID-19 ($M=4.537$, $SD=1.181$), a chronic condition ($M=4.408$, $SD=1.301$), and for a serious condition ($M=4.179$, $SD=1.382$) (see Table 10). Previous research has shown that students are more likely to share health information with parents/guardians if it is a serious condition (American College Health Association, 2008), and this study further extends this trend.

The results for mental health showed that students are less likely to tell their parents/guardians about mental health ($M=3.218$, $SD=1.744$) than a serious condition, chronic condition, COVID-19, or a minor condition ($M=4.126$, $SD=1.395$) (see Table 10). Therefore, participants rated their likelihood to tell their parents/guardians about concerns/symptoms for mental health issues as slightly lower than expected. Laidlaw (2015) showed that some students may not tell their parents/guardians about mental health issues to avoid worrying them, but it also shows that students most commonly reported that they would seek help from someone that they know well. Students ranked their current mental health status as fairly low in the demographics portion of the survey ($M=2.665$, $SD=1.073$), almost a full point lower than how they ranked their physical health status ($M=2.665$, $SD=1.073$).

The low mental health ratings and the lower than expected likelihood to tell their parents/guardians could potentially be due to the increase in stress and anxiety from the COVID-

19 pandemic. One study that looked at the connection between mental health and COVID-19 found that 71% of participants said their stress and anxiety increased since the start of the COVID-19 pandemic (Son et al., 2020). The worsened mental health state of many college students could potentially be correlated with if they are sharing their mental health concerns with their parents/guardians.

This study also showed that students were least likely to tell their parents/guardians about diagnosis/treatment for sexual health ($M=2.558$, $SD=1.892$) when compared to all other illness states. These results support the hypothesis and extend the previous research that shows that students are not likely to share sexual health information with their parents/guardians (Friedman and Morgan, 2008).

The fourteenth hypothesis (H14) stated that, “Gender will interact such that females will be more likely than males to share health-related information with their parents/guardians.” However, gender was not found to be a significant predictor for sharing health-related information with parents/guardians. Although female students are more likely than male students to communicate with their parents/guardians, this trend does not seem to extend to health-related communication (Small et al., 2011). Colleges should focus on how to increase communication between parents/guardians and students about their health since it is correlated to decreasing risky health behaviors (Bylund et al., 2005). Further studies should assess if communication between parents/guardians and students is different for other gender identities than male and female.

Limitations and Future Directions

This study had significant limitations. Since the population of students surveyed was small, this study did not ask students to identify their sexual orientation. However, differences in

healthcare and access to healthcare due to sexual orientation and gender identity is a growing concern for many colleges and universities today (Hood et al., 2018), and this population's preferences towards SDM and their health decisions should be studied further. This study only had hypotheses surrounding individuals who fit within the gender binary (men or women) due to the size and diversity of the population that was studied. This study also did not have a large population of non-binary participants, so results where gender was significant could only be analyzed based on men and women.

The likelihood to seek treatment for an illness state may also differ for transgender or non-binary college students. Transgender people can experience high levels of stigma that may prevent them from seeking out healthcare or from disclosing their gender to their healthcare providers. Furthermore, a nationwide survey showed that one out of every five transgender or non-binary individuals has been refused medical care (Redfern & Sinclair, 2014). Therefore, studying the preferences of more gender identities than men and women is also important to promote the health of all undergraduate students.

A majority of participants in this study were also white, but previous studies have shown differences in SDM preferences and health decisions across different races. A study by Say, Murtagh, and Thomson (2006) showed that white patients are more likely to be involved in SDM than black patients. Another study interviewed 24 African American adults who have diabetes. These interviews focused on their views of SDM, what they view as a barrier to SDM, and the impact of race on SDM. Many participants said that they believed physicians were less likely to involve African American patients in the SDM process (Peek et al., 2010). Further studies should be done to see if this trend extends to undergraduate students and if this varies for other races and ethnicities.

Due to the sample size of this study, it was not possible to examine the preferences for SDM for individuals with chronic illnesses. Further studies should examine if undergraduates extend previous trends that show that adults with chronic illnesses prefer to be more involved in SDM (Wiley et al., 2014). Due to an error, conscientiousness was excluded from the personality scale. Flynn and Smith (2007) studied older adults to determine the relationship between the five factors of personality and health-related SDM. This study saw that individuals with higher levels of conscientiousness had a higher preference for active involvement in SDM. Repeating this study with all personality factors included could explain more variability in SDM.

Reflection

This thesis project was significant because it sought to understand undergraduate student preferences towards SDM and their health decisions. Student's healthcare provider preferences for different illness states was measured. This analysis revealed that students are most likely to prefer either a primary care physician or a specialist for the treatment of most of the illness states. This information could be used when deciding what healthcare providers should staff university and college medical centers. Since physician assistants were often least likely preferred for the illness states, then universities who use physician assistants to treat students could work to increase student knowledge of the role and education of a physician assistant. It was also important to note that students were not likely to access healthcare for a mental health condition, but it was not clear why they were hesitant to access healthcare for this condition. Further studies could be done to see if the location of mental health services, the types of providers offered for mental health, or the campus culture contribute to the likelihood of students accessing mental health care. COVID-19 and the increase in online or virtual mental health services could also potentially discourage students from accessing treatment.

Personality and HLOC factors were seen to be significant in determining student's preferences towards SDM. Most of the personality and HLOC coefficients extended the trends of the pre-existing literature. However, conscientiousness was accidentally excluded from the personality scale, so this study could be repeated again with all personality variables.

Students were most likely to tell parents/guardians about a diagnosis/treatment of an illness state rather than for concerns/symptoms, which was expected. Students were least likely to tell their parents about sexual health or mental health issues. However, parental involvement in college student's health often leads to improved health and treatment options. Further studies could examine why students are not likely to share this health information with their parents and determine how to better improve communication.

Conclusion

The undergraduate student population face many unique health concerns, many of which are similar to those of other young adults. However, students are more likely to use their parent/guardian's health insurance and use on-campus health services for healthcare treatment. Student healthcare decisions, SDM preferences, HCP preferences, and how they communicate with parents/guardians is necessary to study in order to promote the long-term health of students and have students develop healthy lifestyle habits.

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Table 1.

Descriptive Statistics.

Variable	Frequency or Mean	SD	Cronbach's α
Number of Participants	191	-	-
Age	20.09	2.693	-
Gender		-	-
Female	77.2%	-	
Male	18.1%	-	-
Non-Binary	4.1%	-	-
Race or Ethnicity		-	-
Black	7.3%		
Hispanic	1.6%	-	-
Asian	3.1%	-	-
White	83.8%	-	-
Mixed Race	4.2 %	-	-
Has Medical Conditions	19.9%	-	-
Has Health insurance	97.9%	-	-
On Parent/guardian's Health Insurance	91.1%	-	-
Physical Health Status	3.571	0.098	-
Mental Health Status	2.665	1.073	-
Emotional Stability	4.264	1.663	.852
Introversion	4.425	2.135	.876
Openness	5.682	1.564	.807
Internal HLOC	3.933	0.759	.739
Chance HLOC	2.912	0.882	.712
Powerful Others HLOC	2.833	0.792	.656
Informational SDM	2.981	0.706	.733
Behavioral SDM	2.808	0.484	.769
Overall SDM	2.875	0.460	.719
Health Value	3.192	0.055	.670

Table 2.

Standardized Regression Coefficients, t-values, and p-values for Predictors of Shared Decision-Making.

Predictor	Shared Decision Making								
	Information			Behavioral			Overall		
	β	t	p	β	t	p	β	t	p
Emotional Stability	.120	1.511	.133	-.083	-1.086	.279	.058	0.722	.471
Introversion	-.217	-2.867	.005**	.072	0.985	.326	-.125	-1.624	.106
Openness	.158	2.334	.021*	.127	1.948	.053	.214	3.100	.002**
Internal HLOC	.214	3.139	.002**	.092	1.410	.160	.209	3.017	.003**
Powerful Other HLOC	.035	0.529	.598	-.487	-7.610	.001**	-.334	-4.936	.001**
Chance HLOC	-.275	-3.961	.001**	.252	3.777	.001**	-.047	-0.663	.508
	R^2	.22		.28		.20			
Model Fit	$F(6, 183) = 8.76, p < .01$			$F(6, 183) = 11.93, p < .01$			$F(6,183) = 7.57, p < .01$		

* $p < .05$, ** $p < .01$

Table 3.

Means and Standard Deviations for SDM Preferences by Gender. Standard

Deviations are show in parenthesis.

		Types of SDM		
		Informational SDM	Behavioral SDM	Overall SDM
Gender				
	Female	2.993 (0.711)	2.842 (0.494)	2.908 (0.475)
	Male	2.966 (0.735)	2.706 (0.474)	2.772 (0.411)
	Overall	2.988 (0.714)	2.816 (0.492)	2.883 (0.466)

Table 4.

Analysis of Gender by Health Care Provider Type by Illness State.

Source	df	<i>F</i>	<i>p</i>	η	<i>Power</i>
Between					
Gender (G)	1	.001	.984	0.000	0.050
Error	173	-	-	-	-
Within					
Health Care Provider (HCP)	4, 692	35.984	.001**	.172	1.000
Illness State	5, 865	36.884	.001**	.176	1.000
HCP x G	4	0.683	.604	.004	0.223
Illness State x G	5	0.775	.568	.004	0.281
HCP x Illness State	20, 3640	25.281	.001**	.128	1.000
HCP x Illness State x G	20	2.478	.001**	.014	0.998

* $p < .05$, ** $p < .01$

Table 5.

Overall Means for Health Care Provider and Illness State.

Variable	Mean	SD
Health Care Provider		
Primary Care Provider	4.088	0.663
Nurse Practitioner	3.714	0.829
Nurse	3.444	0.898
Physician Assistant	3.462	0.898
Specialist	4.057	0.732
Illness State		
Mental Health	3.088	0.954
Serious Condition	4.108	0.746
Sexual Health	3.908	0.815
COVID-19	4.004	0.912
Minor Condition	3.427	1.175
Chronic Condition	3.983	0.788

Table 6.

Decomposing the Interaction between Gender, Health Care Provider, and Illness State.

Source	df	<i>F</i>	<i>p</i>	η	<i>Power</i>
Women					
Health Care Provider (HCP)	4, 568	54.028	.001**	.276	1.000
Illness State	5, 710	57.620	.001**	.289	1.000
HCP x Illness State	20, 2840	53.871	.001**	.275	1.000
Men					
Health Care Provider (HCP)	4, 124	11.638	.001**	.273	1.000
Illness State	5, 155	8.048	.001**	.206	1.000
HCP x Illness State	20, 620	4.994	.001**	.139	1.000

* $p < .05$, ** $p < .01$

Table 7.

Healthcare Provider Preferences for Illness States Separated by Gender. Standard Deviations are show in parenthesis

Gender										
Women						Men				
Health Care Provider						Health Care Provider				
	PCP	NP	N	PA	S	PCP	NP	N	PA	S
Illness										
Mental Health	3.098 (1.235)	2.797 (1.292)	2.573 (1.225)	2.559 (1.185)	4.406 (0.929)	3.219 (1.453)	2.812 (1.424)	2.844 (1.439)	2.531 (1.295)	4.250 (1.047)
Serious Condition	4.504 (.759)	4.049 (0.981)	3.748 (1.078)	3.832 (1.075)	4.329 (0.955)	4.438 (0.716)	4.156 (0.884)	4.125 (0.833)	4.000 (0.984)	4.469 (0.842)
Sexual Health	4.042 (1.034)	3.832 (1.055)	3.546 (1.099)	3.518 (1.125)	4.678 (0.667)	4.063 (1.190)	3.656 (1.335)	3.406 (1.316)	3.406 (1.316)	4.250 (1.136)
COVID-19	4.413 (0.867)	4.126 (0.963)	3.835 (1.096)	3.846 (1.103)	3.972 (1.289)	4.094 (1.376)	3.875 (1.385)	3.781 (1.385)	3.750 (1.391)	4.094 (1.422)
Minor Condition	3.956 (1.294)	3.650 (1.354)	3.490 (1.321)	3.329 (1.398)	2.587 (1.489)	3.781 (1.431)	3.531 (1.436)	3.438 (1.501)	3.281 (1.550)	3.219 (1.641)
Chronic Condition	4.497 (0.730)	3.881 (1.123)	3.511 (1.162)	3.643 (1.218)	4.371 (1.005)	4.375 (0.751)	4.000 (0.950)	3.813 (0.998)	3.656 (1.153)	4.219 (1.099)

Table 8.

Means for Likelihood of Seeking Healthcare for Illness States by Gender

Standard Deviations are show in parenthesis.

	Gender	
	Women	Men
Illness States		
Mental Health	3.087 (0.957)	3.131 (0.950)
Serious Condition	4.092 (0.717)	4.238 (0.713)
Sexual Health	3.923 (0.813)	3.756 (0.815)
COVID-19	4.036 (0.909)	3.919 (0.905)
Minor Condition	3.403 (1.172)	3.450 (1.171)
Chronic Condition	3.980 (0.777)	4.013 (0.775)

Table 9.

Analysis of Parent/Guardian Communication with Undergraduate Students.

Source	df	<i>F</i>	<i>p</i>	η	<i>Power</i>
Between Subjects Effects					
Gender (G)	1	1.109	.294	.006	.182
Error	178	-	-	-	-
Within Subjects Effects					
Symptoms/Diagnosis	1,178	10.314	.002**	.055	.891
Symptom/Diagnosis x G	1	1.713	.192	.010	.256
Illness State	5,890	95.548	.001**	.349	1.00
Illness State x G	5	1.957	.083	.011	.663
Symptoms/Diagnosis x Illness State	5, 890	1.483	.193	.008	.525
Symptoms/Diagnosis x Illness State x G	5	.518	.763	.003	.194

* $p < .05$, ** $p < .01$

Table 10.

Likelihood to tell Parents/Guardians about Illness States.

Note: Standard Deviations are show in parenthesis.

	Concerns/Symptoms	Diagnosis/Treatment	Overall
Illness States			
Mental Health	3.218 (1.744)	3.403 (1.824)	3.310 (1.690)
Serious Condition	4.179 (1.382)	4.372 (1.140)	4.275 (1.181)
Sexual Health	2.443 (1.771)	2.558 (1.892)	2.500 (1.771)
COVID-19	4.537 (1.181)	4.517 (1.100)	4.527 (1.087)
Minor Condition	4.126 (1.395)	4.187 (1.426)	4.156 (1.328)
Chronic Condition	4.408 (1.301)	4.488 (1.167)	4.448 (1.194)
TOTAL	3.818 (1.006)	3.921 (0.993)	

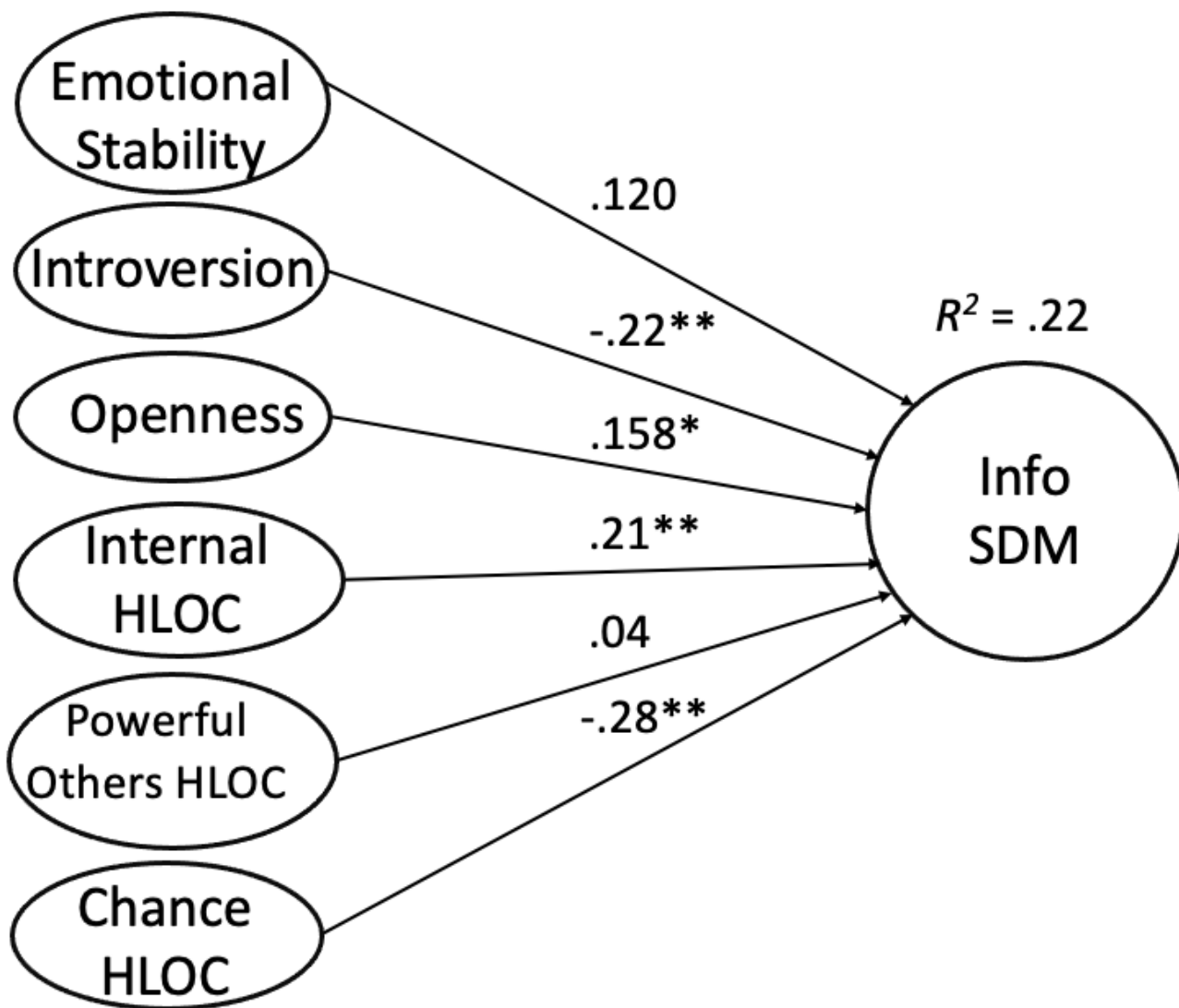
Table 11.

Analysis of Parent/Guardian Communication by Gender.

Note: Standard Deviations are show in parenthesis.

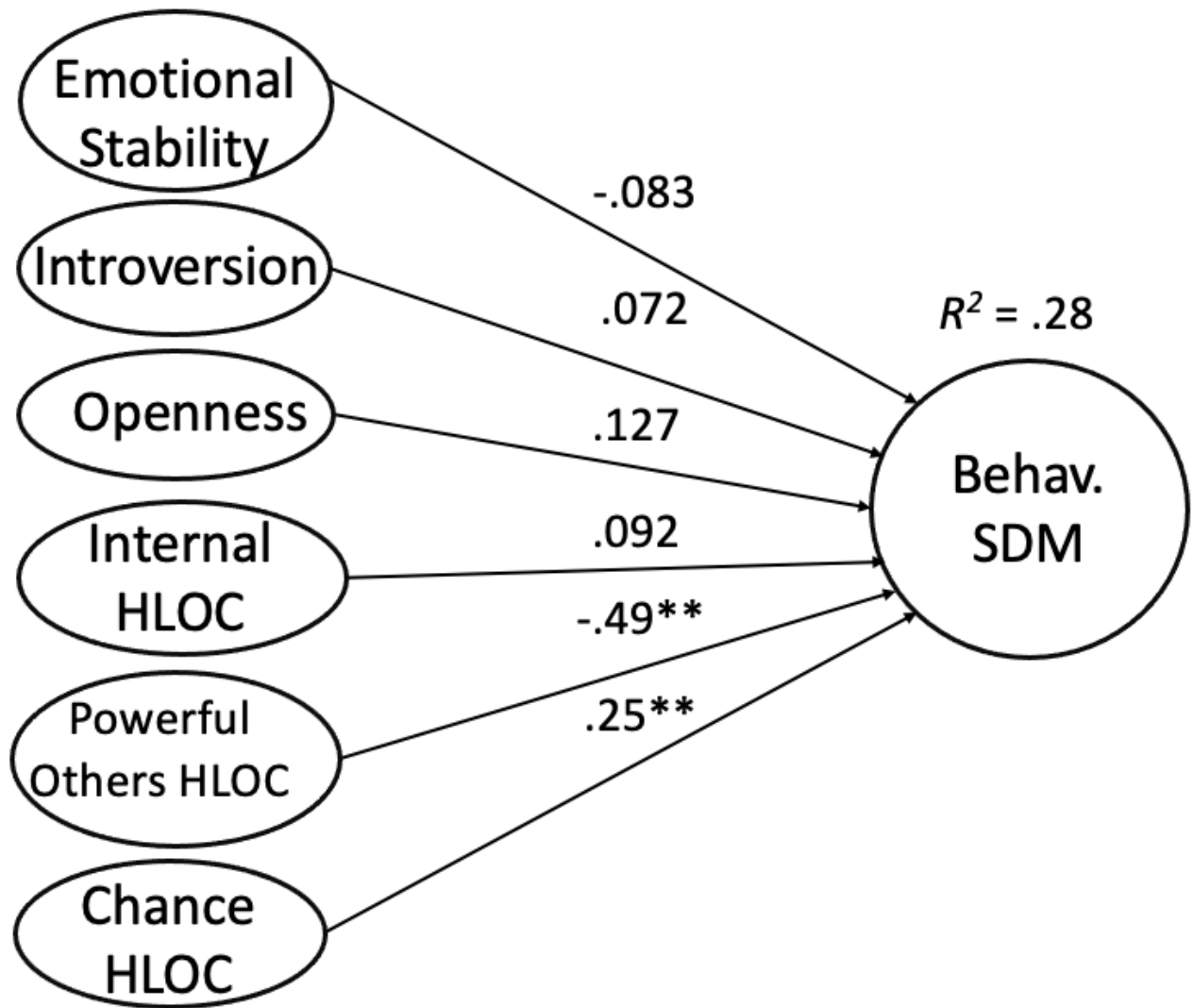
		Communication Type	
		Concerns/Symptoms	Diagnosis/Treatment
Gender			
	Women	3.874 (0.859)	4.018 (0.845)
	Men	3.763 (1.811)	3.823 (1.798)

Figure 1.

Predictors of Informational SDM.

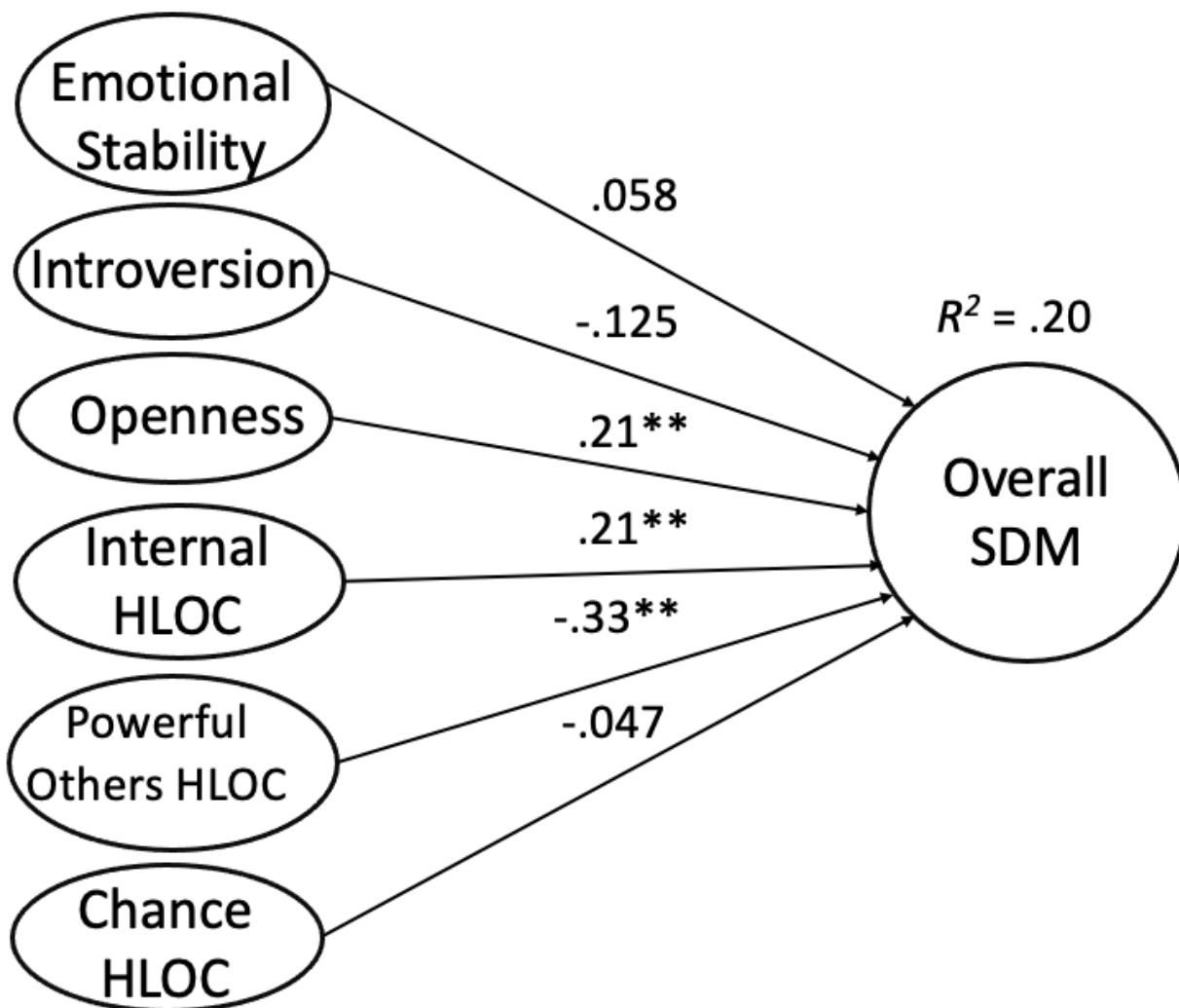
* $p < .05$, ** $p < .01$

Figure 2.

Predictors of Behavioral SDM.

* $p < .05$, ** $p < .01$

Figure 3.

Predictors of Overall SDM.

* $p < .05$, ** $p < .01$

Figure 4.

Preferences for HCP. Bars with the same letter indicate that the values are not significantly different from one another.

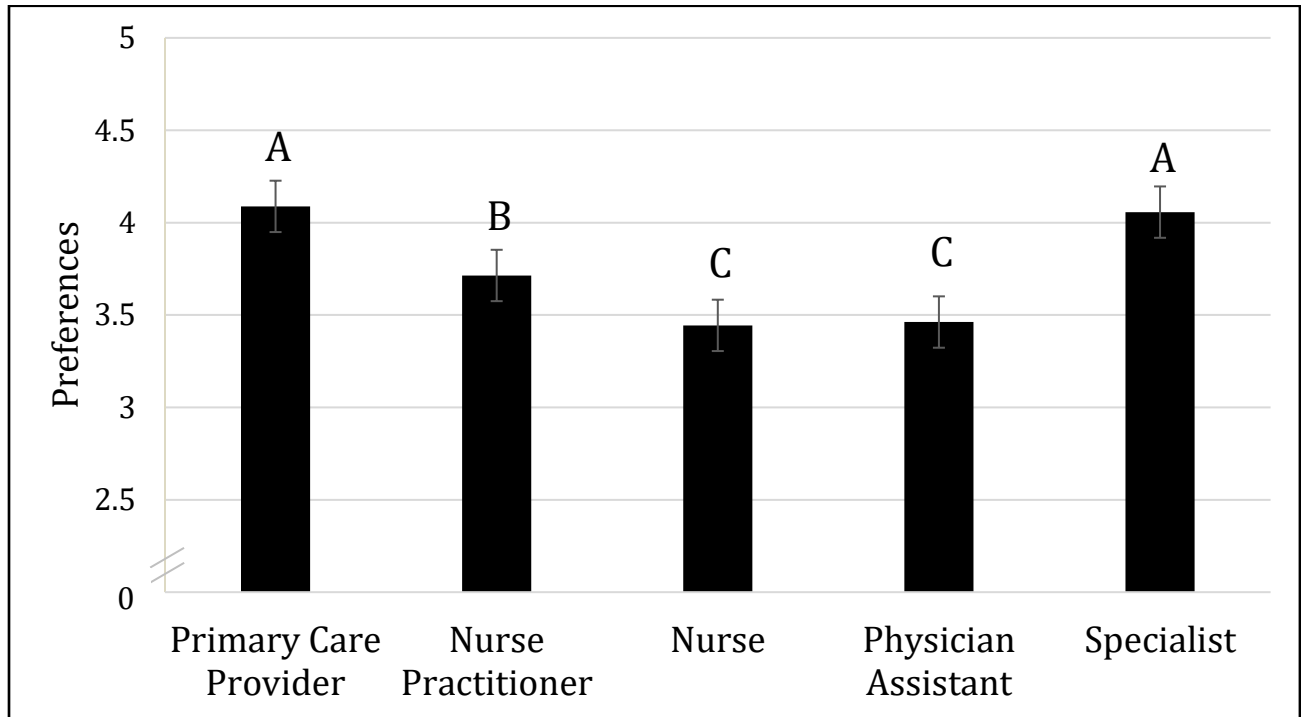


Figure 5.

Likelihood to seek help for Illness States. Bars with the same letter indicate that the values are not significantly different from one another.

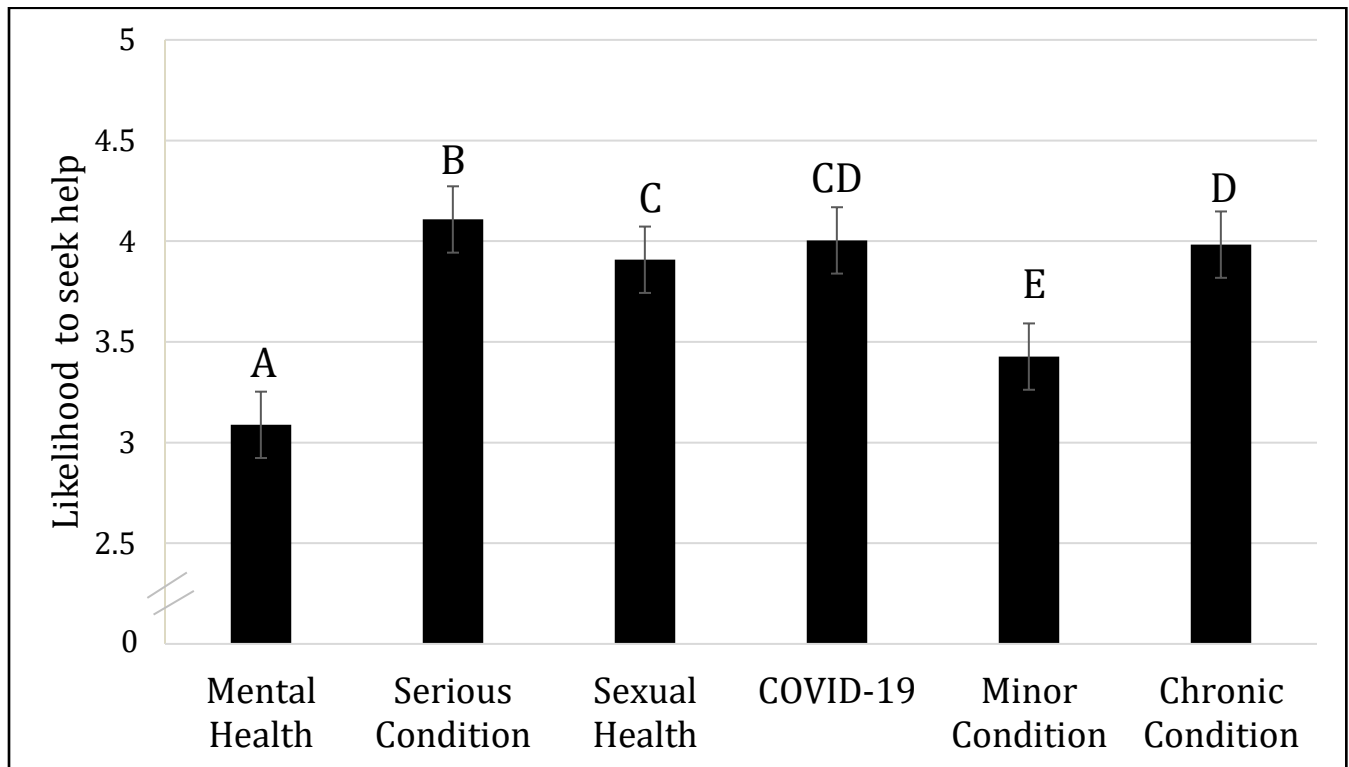


Figure 6.

Preferred HCP by Illness State for Women. Bars with the same letter indicate that the values are not significantly different from one another.

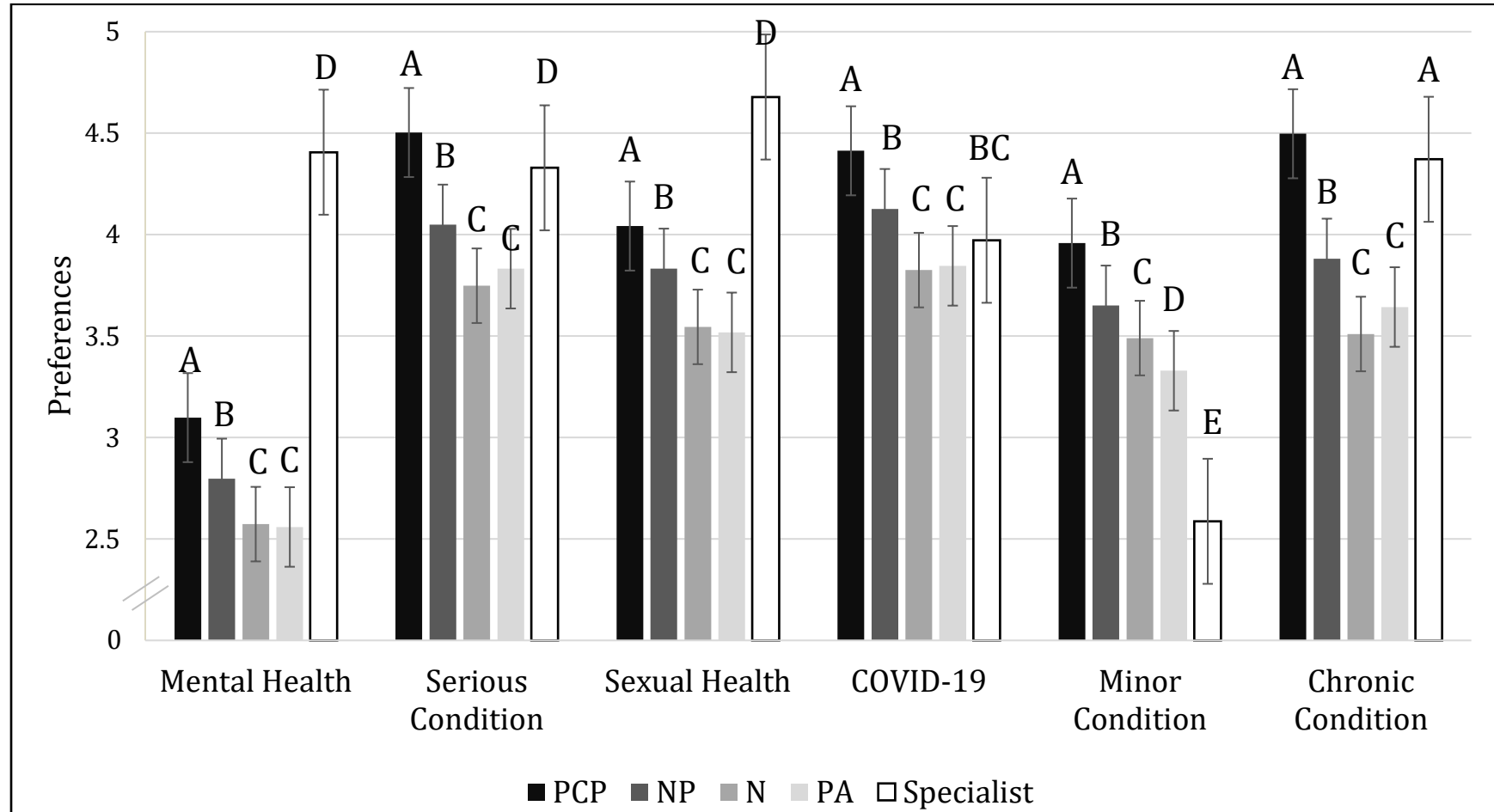


Figure 7.

Preferred HCP by Illness State for Men. Bars with the same letter indicate that the values are not significantly different from one another.

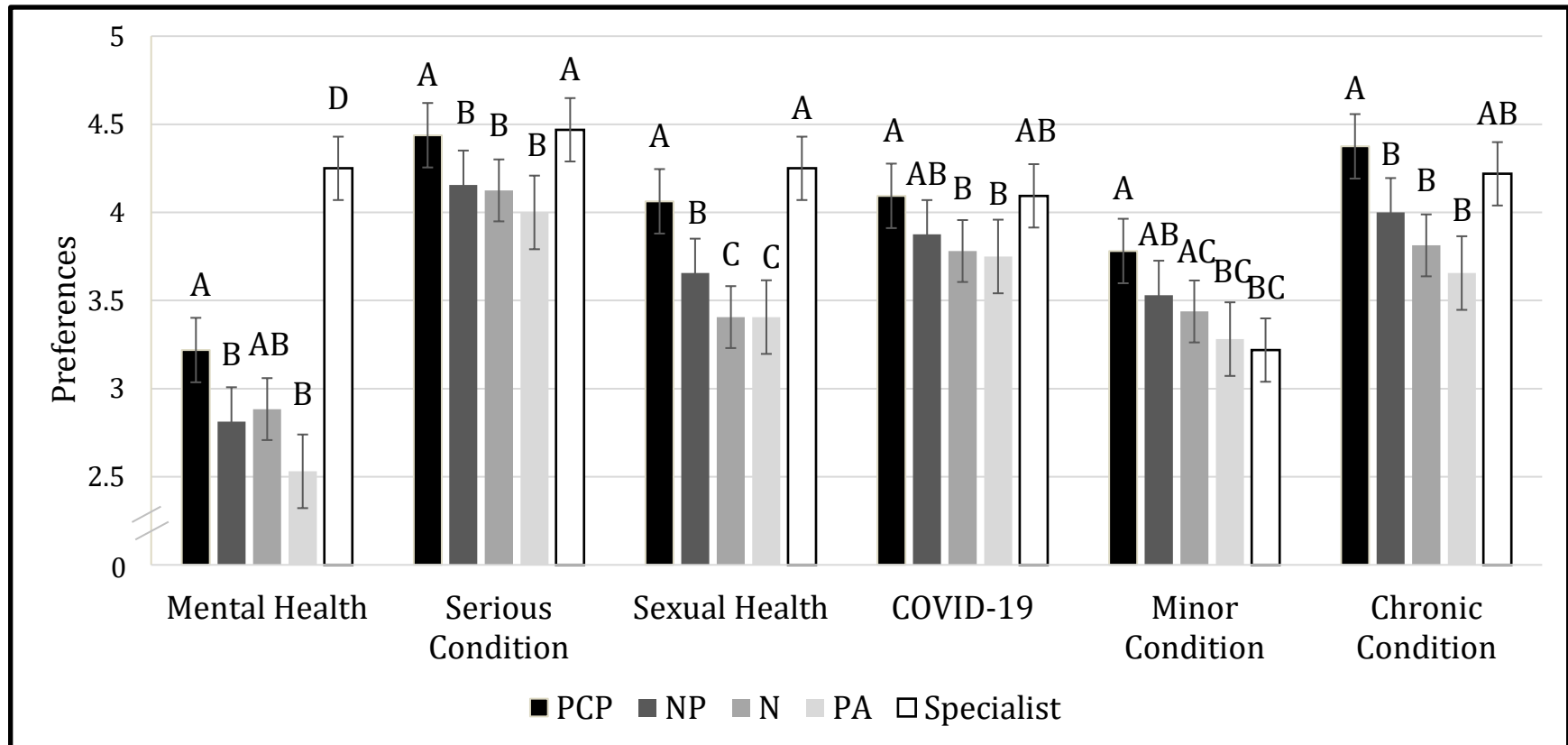


Figure 8.

Likelihood to tell Parents/Guardians about Concerns/Symptoms vs. Treatment/Diagnosis. Bars with the same letter indicate that the values are not significantly different from one another.

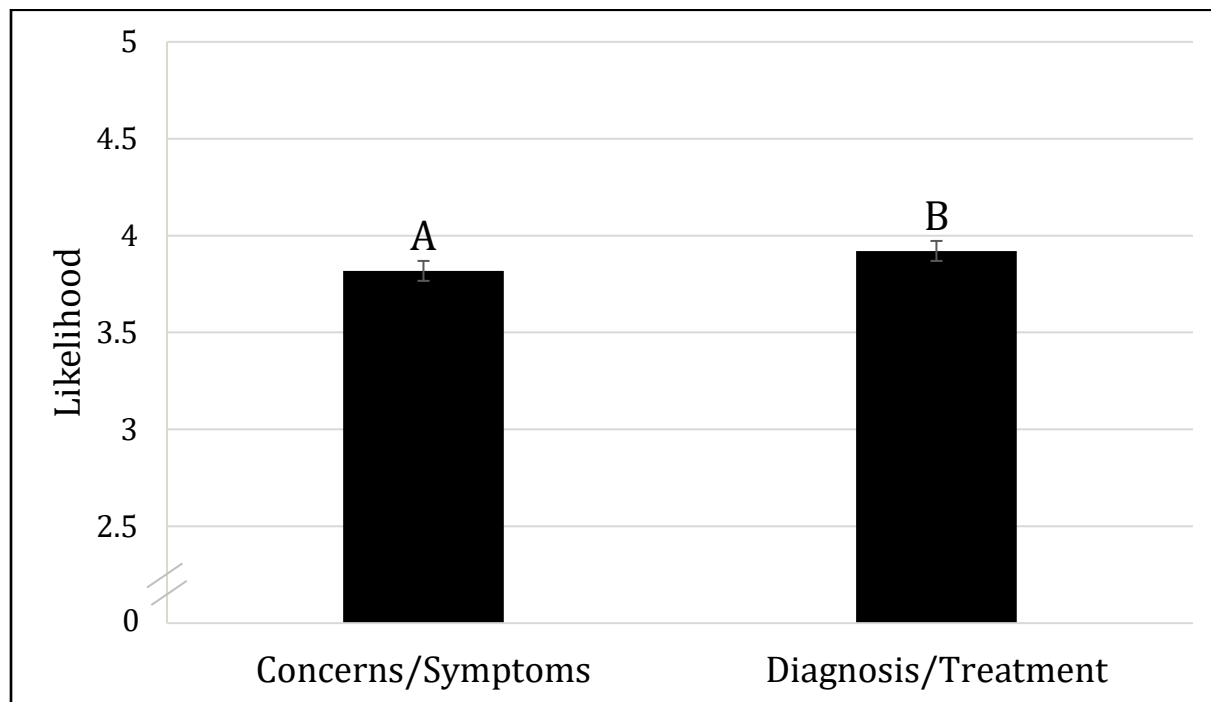
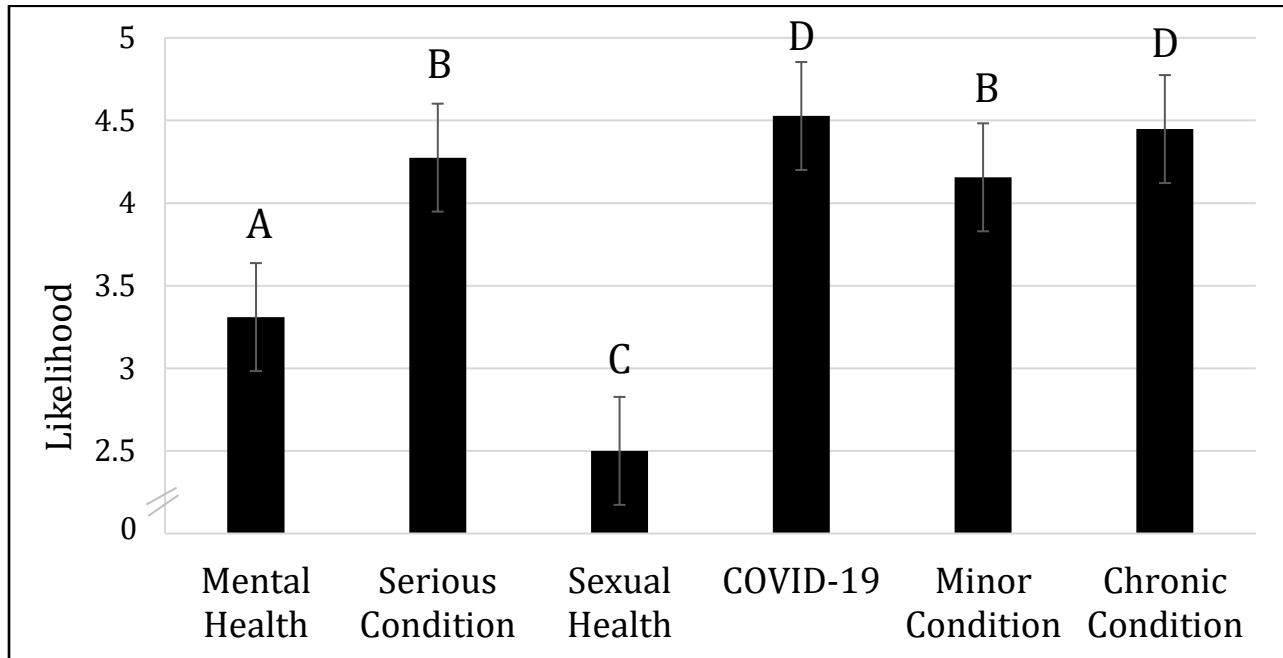


Figure 9.

Likelihood of Telling Parents/Guardians about Illness States. Bars with the same letter indicate that the values are not significantly different from one another.



Appendix A

Complete Survey.

Please answer the questions below.

1. Age

2. Gender

a. Male

b. Female

c. Non-Binary

d. Other _____

e. Prefer not to disclose

3. Race/Ethnicity (Check all that apply)

a. Black

b. White

c. Indigenous Person (Native Hawaiian, Pacific Islander, Native American, Alaskan Native)

d. Asian

e. Hispanic

f. Latino/a

g. Other _____

4. Do you have a medical condition that requires ongoing treatment by a healthcare professional (ex. diabetes, asthma, cancer, chronic conditions)?

a. Yes

b. No

c. Prefer to Not Answer.

5. Do you have health insurance?

a. Yes

b. No

6. Do you use your parent's/guardian's health insurance?

a. Yes

b. No

7. How would you rate your current health status?

a. Poor

b. Fair

c. Good

d. Very Good

e. Excellent

8. How would you rate your current mental health status?

a. Poor

b. Fair

c. Good

d. Very Good

e. Excellent

Shared Decision Making

The following questions are designed to measure your preferences for shared decision making in different health-related scenarios. Think about how much involvement you would prefer your

healthcare professional and you have in making a decision. For each item, please indicate how much you disagree or agree with the statement.

Strongly Disagree Disagree Neutral Agree Strongly Agree.

1. I usually don't ask a health professional many questions about what they're doing during a medical exam. *
2. Except for serious illness, it's generally better to take care of your own health than to seek professional help.
3. I'd rather have health professionals make the decision about what's best than for them to give me a whole lot of choices.*
4. Instead of waiting for them to tell me, I usually ask a healthcare professional immediately after an exam about my health.
5. It is better to rely on the judgements of healthcare professionals (who are the experts) than to rely on "common sense" in taking care of your own body. *
6. Clinics and hospitals are good places to go for help since it's best for healthcare professionals to take responsibility for health care. *
7. Learning how to cure some of your own illness without contacting a healthcare professional is a good idea.
8. I usually ask a healthcare professional lots of questions about the procedures during a medical exam.
9. It's almost always better to seek professional help than to try to treat yourself. *
10. It is better to trust a healthcare professional in charge of a medical procedure than to question what they are doing. *

11. Learning how to cure some of your illness without contacting a healthcare professional may create more harm than good. *
12. Recovery is usually quicker under the care of a healthcare professional than when patients take care of themselves. *
13. If it costs the same, I'd rather have a healthcare professional give me treatments than to do the same treatments myself. *
14. It is better to rely less on healthcare professionals and more on your own common sense when it comes to caring for your own body.
15. I usually wait for the healthcare professional to tell me the results of a medical exam rather than asking them immediately. *
16. I'd rather be given many choices about what's best for my health than to have the healthcare professional make the decisions for me.

*= reverse scored

Personality Scale

The following questions are designed to assess basic personality characteristics. For each item, please indicate how much the statement describes you using a 9-point scale where 1 = Never, 9 = Always.

1. Moody more than others
2. Temperamental
3. Emotions go way up and down
4. Testy more than others
5. Feel bashful more than others
6. Shy

7. Quiet when with people
8. More original than others
9. Imaginative
10. Find novel solutions

Health Value Scale

The following questions are designed to measure how much you value your health. Select the answer that best describes how you feel about the following statements using a 7-points scale where 1 = Strongly Disagree, 4 = Neither Agree/Disagree, 7 = Strongly Agree

1. If you don't have your health you don't have anything.
2. There are many things I care about more than my health.*
3. Good health is of only minor importance in a happy life.*
4. There is nothing more important than good health.

*=reverse scored

Health Locus of Control

The following questions are designed to measure your health locus of control beliefs. Select the answer that best describes how you feel about the following scenarios using a 6-point scale where 1 = Strongly Disagree and 6 = Strongly Agree

1. If I get sick, it is my own behavior which determines how soon I get well again.
2. No matter what I do, if I am going to get sick, I will get sick.
3. Having regular contact with my physician is the best way for me to avoid illness.
4. Most things that affect my health happen to me by accident
5. Whenever I don't feel well, I should consult a medically trained professional.
6. I am in control of my health.

7. My family has a lot to do with my becoming sick or staying healthy.
8. When I get sick I am to blame.
9. Luck plays a big part in determining how soon I will recover from an illness.
10. Health professionals control my health.
11. My good health is largely a matter of good fortune.
12. The main thing which affects my health is what I myself do.
13. If I take care of myself, I can avoid illness.
14. When I recover from an illness, it's usually because other people (for example: doctors, nurses, family, friends) have been taking good care of me.
15. No matter what I do, I'm likely to get sick.
16. If it's meant to be, I will stay healthy.
17. If I take the right actions, I can stay healthy.
18. Regardless of my health, I can only do what my healthcare provider tells me to do.

Parent/Guardian Healthcare Communication

The following questions are designed to measure what health-related information you share with your parents or legal guardians. Please respond to each question below on a scale of 1 (Not at all Likely) to 5 (Extremely Likely)

How likely are you to tell your parents or legal guardians about CONCERNS AND SYMPTOMS of the following illness states?

1. Sexual health issues (ex. STI Testing)
2. Mental health condition (ex. anxiety, depression)
3. Chronic health condition (ex. anxiety, diabetes, allergies that require treatment by a medical provider)

4. COVID-19

5. Minor health condition (ex. cold, flu, sprain)

6. A serious health condition (ex. racing heart rate, difficulty breathing),

How likely are you to tell your parents or legal guardians about a DIAGNOSIS or TREATMENT for the following illnesses or conditions?

1. Sexual health issues (ex. STI testing),

2. Diagnosis of or receive treatment for a mental health condition (ex. anxiety, depression)

3. Chronic health condition (ex. asthma, diabetes, allergies that require treatment by a medical provider)

4. COVID-19

5. Minor health condition (ex. cold, flu, sprain)

6. Serious health condition (ex. racing heart rate, difficulty breathing)

Healthcare Provider Preference

The following questions are designed to measure who you prefer to see for different illness states. Please respond to each question below on a scale of 1 (Not at all Likely) to 5 (Extremely Likely)

If seeking help for mental health treatment (ex. anxiety, depression), how likely would you be to seek advice from:

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. therapist, psychiatrist, psychologist)

If seeking help for a serious medical condition (ex. racing heart rate, difficulty breathing), how likely would you be to seek advice from:

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. cardiologist)

If seeking help for sexual health treatment (ex. STI testing, birth control), how likely would you be to seek advice from...

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. OBGYN, urologist)

If seeking help regarding COVID-19, how likely would you be to seek advice from...

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. Infectious Disease Specialist)

If seeking help for a minor condition (cold, flu, sprain), how likely would you be to seek advice from...

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. Infectious Disease Specialist)

If seeking help for a chronic health condition (ex. asthma, diabetes, allergies that require treatment by a medical provider), how likely would you be to seek advice from...

Primary Care Physician

Nurse Practitioner (NP)

Nurse

Physician's Assistant (PA)

Specialist (ex. pulmonologist, endocrinologist, allergist)