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COMPLEMENTARY OR ALTERNATIVE MEDICINE USAGE OF MOTHERS SEEKING TO PREVENT CORONAVIRUS ILLNESS OR MANAGE SYMPTOMS: IDENTIFYING RELATIONSHIPS EXISTING BETWEEN MENTAL CONSTRUCTS AND CONCEPTS OF THE HEALTH BELIEF MODEL

Gabrielle Frachiseur
University of Texas at Tyler

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Gabrielle Frachiseur

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William Sorensen, Ph.D., Committee Chair

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GABRIELLE FRACHISEUR

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Approvals:

Thesis Chair: William Sorensen, Ph.D.

Member: Cheryl Cooper, Ph.D.

Member: Fletcher Njororai, Ph.D.

Chair, Department of Health and Kinesiology

Dean, School of Community and Rural Health

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Table of Contents

List of Tables

List of Figures

Abstract

EXPLORING CORONAVIRUS KNOWLEDGE, BELIEFS, AND ATTITUDES OF MOTHERS, AND THE USAGE OF COMPLEMENTARY AND ALTERNATIVE METHODS OF INFECTION PREVENTION OR SYMPTOM MANAGEMENT

Gabrielle Frachiseur

Thesis Chair: William Sorensen, Ph.D.

The University of Texas at Tyler

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Background: Mothers are the central supportive structure in most households. Mothers can become overwhelmed by informational overload when selecting the most appropriate modalities of care to provide for their families during the pandemic. The researcher sought to discover the prevalence of complementary or alternative medicine usage (CAM) for the prevention of coronavirus illness or symptoms management. Additionally, the researcher sought to identify the relationship between three additional mental constructs; knowledge, attitudes and beliefs, and constructs of the Health Belief Model, that could affect CAM adoption.

Methods: A cross-sectional survey was dispersed to 5 private Facebook groups. The survey was targeted to collect responses only from mothers, over the age of 18, who could speak English. The survey anonymously collected demographic information, personal coronavirus experiences, HBM-focused questions, and coronavirus knowledge, attitude, and belief questions.

Results: Initial analysis showed that 14% of survey respondents had tested positive for COVID-19, regardless of experiencing symptoms, or not. Further analysis related to hypothesis testing yielded that the HBM construct of perceived susceptibility significantly influenced some mothers' decisions to adopt CAM for coronavirus illness treatment (p-value=.049). No other constructs of the HBM were found to be significantly influencing mothers' decision to use CAM for coronavirus illness or treatment. The age of the respondents significantly impacted some mothers' adoption of CAM to treat coronavirus illness, with older mothers more likely to adopt CAM usage than younger mothers. Knowledge scores significantly influenced mothers' decisions to use CAM for coronavirus illness prevention (p-value=.018), yet these scores did not significantly affect can CAM usage for coronavirus illness treatment (p-value=.088). Overall, the cognitions motivating mothers to adopt CAM for coronavirus illness or prevention were completely different. This suggests that pathways of reasoning specific to prevention and treatment may have separate processes, influences, and motivations.

Conclusion: Mothers have experienced the insurmountable task of trying to balance all facets of motherhood, with the uncertainties of the pandemic. Mothers must become public health researchers, themselves, to provide the most appropriate care possible for their families. This study shows that mothers' cognitions differ when choosing to adopt CAM for coronavirus illness versus symptom management. More research should be done to understand why patterns of behavior deviate so far from previously studies centered on the HBM, CAM, and mental constructs influencing the health behaviors of mothers. Future research should prioritize understanding factors influencing CAM usage for both prevention and treatment of coronavirus illness, as well as the relationships that

exist between mental constructs, health behavior models and frameworks, demographics, and infection experiences.

Chapter 1: Introduction

Motherhood & COVID-19

Mothers have been the focus of academic and opinion-based articles and discussions, for many years. Some social scientists have sought to cultivate research that can accurately depict the behaviors, knowledge, and beliefs of a diverse population of mothers. *The Motherhood Study* (2005), accomplished this on a large scale, by surveying more than 2,000 mothers across America, capturing a sample that was thought to be closely representative of the current population. In this study, regardless of educational attainment, income levels, or age, mothers were found to share similar sets of beliefs about such as their personal satisfaction from mothering, shared stress levels associated with parenthood, and perceived the primary responsibility for their children's basic needs. Concerns for their children's health and safety remained forefront in their minds (Erickson & Aird, 2005). While research regarding motherhood, in general, is continually growing, the focus has recently shifted to include factors or impacts related to the current worldwide coronavirus pandemic.

Weisberg et al. (2011) found that women were statistically more likely to be the primary caregivers in their home, meeting the needs of both the household and the individuals. As the novel coronavirus pathogen spread across the globe, occurrences that previously seemed to be so distant were now creeping closer to home. As the virus spread, and the number of confirmed cases surged, the uneasiness about how best to protect oneself, and one's family, increased. Daily press briefings were held to update the public on new developments of the virus, including the growing number of incident cases, case prevalence and the current recommendations on how to effectively reduce transmission (WHO, 2020). Guidelines and recommendations for best practices rapidly

evolved. While many mothers were adopting the suggestions in stride, some became conflicted about aligning themselves with information that fluctuated so swiftly. Recommendations about protective measures put forth by the Centers for Disease Control and Prevention (CDC), or the World Health Organization (WHO) sometimes appeared to be more political than scientific. Additionally, the deliberate spread of misinformation related to coronavirus research also posed a significant danger to those who find themselves overwhelmed or conflicted by the quality or quantity of information available to review.

Nonetheless, researchers have continued to pour their efforts into analyzing not only the biological makeup of the pathogen, and the resulting clinical features of the subsequent illness, but also into researching the social impact of the virus, including the effect on health behaviors. Continued efforts must maintain importance, in order to assess influencing factors that could have protective or preventative benefits in preserving the health of families, so that public health interventions can be maximally effective.

As COVID-19 case counts increased, and approved vaccinations or methods of treatment were yet to be released, a common theme that began to increase in popularity of many social media networks and forums, was best practices to prevent COVID-19 infection, or assist with symptom management if the virus had been contracted (Al-Dmour et al., 2020). While public health authorities continuously updated effective ways to keep individuals safe in the wake of the pandemic, still, many mothers were attempting to integrate additional resources into their regiment of care to improve their odds of keeping their families as healthy as possible. This included the integration of complementary and alternative medicines (CAM) into mother's arsenal of care practices.

Complementary & Alternative Medicine

CAM is defined by the National Cancer Institute (NCI, 2020) as, "medical products and practices that are not part of standard medical care (para.1)." Complementary methods are those that are used in conjunction with standard medical practices. An example of complementary methods would be ingesting a special herbal tea, to lessen side effects of a medical treatment. Alternative methods are those that are used in lieu of recommended medical treatment. An example of an alternative method would be a patient being non-compliant with a prescribed drug, and instead, adopting a specific diet with the purpose of healing their illness. A comprehensive diagram of popular CAM modalities can be found in Appendix A. A 2002 CAM study involved gathering information from over 30,000 adult respondents across the US, and found that approximately 36% of US adults had used some form of CAM within the last year (NCCIH, 2002).

In a 2010 CAM study, Ventola (2010) asserted that patients decreased authoritarian view of the medical system may have propagated increased beliefs in the efficacy of CAM. This could have been reinforced by the optimization of conventional medicine, as well, which led to more standardized and effective treatment modalities. However, patients do not readily offer up information regarding their CAM practices to their care providers. In an online survey reviewed in Ventola's systematic review, an estimated 72% of respondents stated that they did not report their CAM usage to their doctors or care providers. This can severely impact the effectiveness of prescribed medical protocols, since very few, if any methods of CAM have been thoroughly evaluated for their safety and efficacy (NCI, 2021). Although CAM use may not be

openly communicated between patient and their provider, it may not inhibit timely or appropriate medical care, as needed to maintain optimal health.

Garrow and Egede (2006) claimed CAM usage may not be a barrier to the use of conventional medical care for adults in the US, while Bleser et al. (2020) contended that children receiving alternative modalities of primary medical care were less likely to receive vaccinations and thus, contract more diseases known to be vaccine-preventable. Additionally, Attwell et al. (2018) explored CAM usage in relation to standardized medical protocols in American parents. This study found that while the parents surveyed were primarily vaccine-hesitant or vaccination refusing, CAM did not cause vaccine rejection. While numerous studies can be found to support or refute the value of CAM usage in the world of Western medicine, not many studies look deeply into the cognitions that influence the adoption or motivators precursory to CAM usage.

Overall, CAM treatments and modalities are unregulated, and should not be regarded as the primary method of prevention or treatment as compared to standard medical recommendations. Therefore, the researcher sought to understand what was influencing mothers to adopt CAM strategies, by assessing the prevalence of CAM usage related to COVID-19, and identifying relationships with mental constructs that could drive CAM usage by mothers. The researcher proposed to explore this relationship, by using the Health Belief Model (HBM) as a guiding framework.

HBM

The Health Belief Model (HBM) is a value-expectancy theory developed by the US Public Health Service to determine why individuals were not utilizing tuberculosis (TB) screenings made available to them via mobile vans, located in their neighborhoods.

More importantly, TB was viewed as very preventable and treatable when caught in early screening processes, and so researchers were perplexed at the uptake in services was very minimal. In an effort to understand why this occurred, the HBM was developed, to help understand why patients simply would not engage in this program, as well as other initiatives of similar design (Glanz, 2008).

Janz, Champion, and Stretch (2002) defined the HBM as viewing the value assigned maintaining wellness or seeking treatment when ill, and the resulting beliefs regarding the effects of modifying the behavior. The HBM originally consisted of four primary constructs: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. In later years, theorists added the constructs of 'cues to action' and self-efficacy, from Bandura's Social Cognitive Theory, to account for the cognitive and affective factors that influence behaviors, both internally and externally to the individual (Glanz, 2008). The HBM had been used for decades to explore the reasons individuals modify health behaviors, and thus the researcher believed that the model worked best to explore the study's aim.

Study Aim

This study aimed to first identify the prevalence of CAM usage by mothers in the midst of the pandemic. Additionally, this study aimed to assess the behaviors and cognitions of mothers, influencing CAM usage for prevention or treatment of coronavirus illness. Furthermore, this study explored the impact that a mother's beliefs, attitudes, and knowledge have on CAM usage.

Finally, this study used the HBM, to determine which of the model's constructs were the most influential in eliciting CAM usage by the study's participants.

Hypotheses

- The construct of perceived severity of the HBM, by the mother, will influence the adoption of CAM usage.
- Mothers with lower education levels, or lower coronavirus knowledge scores will be less likely to engage in preventative behaviors or CAM usage to reduce the chance of coronavirus transmission or infection.
- Older mothers (aged 36 years or older) will be less likely to participate in CAM usage, than younger mothers (aged 18-35).

In the next chapter, the literature review, I explored supporting research from which I evaluated relevant and applicable content in order to articulate my aims and hypotheses.

Chapter 2: Literature Review

Importance of Studying Mothers

Motherhood marks one of the most significant transformative periods of a woman's life. As mentioned in the introduction, research tells us that women are the more nurturing sex, due to a combination of biological, social, and cultural factors (Moore et al., 2014). Weisberg et al. (2011) found that women generally display more compassionate qualities than males, specifically in the domains of emotional investment, empathy, and care (DeYoung, 2011). Additionally, research has shown that women are more likely to be the primary caregivers in a home, assuming care for those within the household, and even extending that compassion to those connected to the home through the community (Haddad & Malak, 2002; Eagly & Wood, 1991).

Therefore, it is the mothers who become tasked with assuming the responsibility for all decisions regarding health, wellness, and quality of life for not only themselves, but for their children, as well. While it is to be expected that mothers make decisions to preserve or improve the health status of their families, the investigator of this present study seeks to identify specifically what a mother's regiment of care looks like, relating to CAM usage.

With coronavirus being novel in the scientific community, researchers are rapidly publishing findings to support evidence-based recommendations and best practices pertaining to coronavirus infection and illness. However, research has yet to delve into how mothers are making decisions on how to care for themselves and family members in the midst of the pandemic, as far as the investigator knows. This study attempts to fill a

gap in the literature, by bridging theory, knowledge, and practice pertaining to mothers' decisions surrounding coronavirus infection or COVID-19.

The Beginning of a Pandemic

By January 30, 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern (PHEIC) (WHO, 2020). The WHO reconvened the International Health Regulations Committees and Expert Roster (IHR Emergency Committee) to ensure a measured and evidence-based response to the virus's global spread (WHO, 2020). As case numbers increased, coronavirus illness began consuming entire populations, while COVID-19 was being characterized by a range from moderately severe infection to relatively high mortality. By February 4th, mortality rates for those with confirmed diagnosis of COVID-19 reached 2.1%, while those that were admitted into a hospital for COVID-19 experienced about an 11-15% mortality rate (Huang et al., 2020; Chen et al., 2020). For those outside of China, the initial mortality rate was determined to be about 0.2% (WHO, 2020), but those numbers swiftly increased as the virus spread.

On March 11, 2020, coronavirus infection had spread to 114 countries and 118,000 cases, resulting with the WHO declaring a worldwide pandemic (WHO, 2021). As of November 1st, 2021, there were over 246 million confirmed cases of COVID-19, resulting in nearly 5 million deaths (WHO, 2021). The WHO established a Research and Development Blueprint (R&D Blueprint, 2020), to better coordinate scientists, global health professionals, and accelerate the global response to COVID-19 research efforts. The R&D Blueprint is tasked with accelerating diagnostics, vaccines and therapeutics, helping the current pandemic response to be as efficient as possible, while laying the

groundwork for the world to be immensely more prepared the next time a pandemic ensues(WHO, 2020).

At the time of the thesis proposal (November 2020), the efforts by the R&D Blueprint had not produced an approved immunization protective against coronavirus or COVID-19. At the time, the most effective measures of protection against coronavirus infection or COVID-19 and limiting chances of exposure were: practicing social distancing, wearing personal protective equipment, practicing good respiratory hygiene, washing or disinfecting the hands, and staying home or self-isolating if an individual felt sick or began to display symptoms of coronavirus infection (WHO, 2020). For better perceived protection, people chose to add additional prophylactic treatment measures into their daily routines that they believe will contribute to heightened immunity to coronavirus infection. This included taking an array of vitamins and supplements, consuming "superfoods" not typically found in their diets, or taking over-the-counter (OTC) medications that are formulated to treat an array of COVID-19 symptoms.

Health Belief Model

The HBM is one of the most utilized conceptual frameworks in health behavior research, in serving both as a guide for developing interventions, and explaining shifts in health-related behaviors (Rosenstock, 1974). The HBM was developed by social psychologists from the US Public Health Service in the 1950's, to explain the low uptake of programs aimed to identify and prevent diseases, specifically tuberculosis screenings made available in neighborhoods via X-ray vans (Glanz, 2008). The popularity of the HBM is due to the model's high predictive power of health-related behaviors (Rosenstock, 1988). The HBM is composed of multiple constructs that predict whether

individuals will take actions to identify, avoid or regulate illness conditions. The constructs of HBM are: 1) the seriousness of the risk (perceived severity), 2) the belief in being at risk (perceived susceptibility), 3) the rationale to reduce the incidence or severity of the disease (perceived benefit), 4) the perceived higher cost versus the benefits of action (perceived barriers), and 5) cues to action. The HBM has been used in prior research to understand the relationship between beliefs, health behaviors, and health-threatening epidemics, such as the 2003 SARS outbreak (Durham & Casman, 2011). The HBM has also been used in COVID-19 research to determine the likelihood of individuals' to receive a vaccination against COVID-19 when they become available (Wong et al., 2020) , mental health and emotional impacts of COVID-19 (Mukhtar, 2020), and studying individuals general perceptions of COVID-19 (Nasir et al., 2020).

HBM and Predictors of Intent to Receive Vaccination

Wong et al. (2020) analyzed results from a cross sectional survey, delivered to participants in April 2020. The study was designed to 1) assess participants perceptions of HBM constructs related to COVID-19 infection, and 2) detect predictors of participants intention to receive and willingness to pay (WTP) for the COVID-19 vaccination.

The study consisted of questions that evaluated the participants demographic background, health status, COVID-19 experience, intentions to receive a vaccine, WTP for the vaccine, and HBM constructs. The study analyzed barriers affecting patients WTP, to provide insights into future pricing considerations, and predict the demand for the vaccination.

Researchers dispersed the questionnaire via the world-wide-web, using advertisements on social media platforms including Facebook, WhatsApp, and Instagram, reaching a total of 1,159 participants. Some findings were that participants held high perceptions of their susceptibility to COVID-19, and assumed that they would fall ill within the next few months. The majority of participants also maintained high perceptions of the severity of the illness, high perceptions of benefits and perceived barriers. Many were alarmed with the affordability of coronavirus vaccination, and felt they would only invest in the vaccination if they felt they had received sufficient information about the vaccination (98%), and if they felt that the majority of the populace was receiving the vaccination, as well (74.3%). Analysis yielded findings in support of the HBM construct of perceived benefits, explicitly the belief that vaccination decreases the chance of coronavirus infection and the belief that vaccination would result in the receiver feeling less worried about coronavirus infection, as the strongest indicator of vaccination intention. Although many of the participants were concerned about the probability of contracting coronavirus infection that would develop into COVID-19, few considered themselves as high-risk to infection. This is significant because preventative actions relating to infectious disease outbreaks are driven by the population's high perception of risk. To maximize the efficacy of vaccination campaigns, the population must view themselves as high-risk, therefore engaging in the preventative action.

Additionally, the researchers found a significant belief in the participants' perceptions of benefits of receiving the inoculation, and perceptions of COVID-19 infection severity, leading to acceptance of the vaccination (94.3%). From this study, WTP was determined to be a significant barrier in assessing vaccination uptake. In

summary, most participants perceived the importance of receiving the vaccination and emphasized the value of safety and effectiveness of the vaccination over other factors.

Mental Health and Emotional Impact of COVID-19

Muhktar (2020) sought to highlight the importance of constructs of the HBM, in influencing mental health and the emotional status of those effected by COVID-19. The study implied that applying constructs of the HBM to COVID-19 in moderating behaviors which elicits fear or anxiety will help individuals cope better with the unexpected outcomes of the pandemic.

The article suggests that the measures that ensure an individuals' safety, and reduce the burden of the illness or disease on others, may include both social distancing and quarantining. The author suggests that while these practices will result in a positive impact on health by reducing transmission of the infection, the mental health and emotional distress it can cause, especially on those serving in the healthcare sector, may be severely damaging. The author referenced cases on stress induced hysteria in hospital frontline workers, and traumatization to the general public via a constant stream of updated infection statistics via media outlets, could harm individuals beyond anticipated levels. Regardless, adhering to the recommendations of public health authorities remains the primary method of reducing transmission of coronavirus illness and COVID-19 to others. In order for public health campaigns to be effective, individuals must perceive susceptibility to risk of infection, and perceive severity of the illness or disease, while the intervention must successfully reduce perceived barriers to health and elevate perceived benefits of partaking in the health action contributing to overall wellbeing.

Thus, the authors hoped to see more interventions developed based around constructs of the HBM, in order to formulate interventions that were maximally effective on the population's adoption of illness prevention actions, while being minimally disruptive to individuals' mental health status and emotional wellbeing.

Study of the Sudanese Perceptions of COVID-19: Applying the HBM

A cross sectional survey disseminated by researchers to 877 Sudanese participants, sought to explore the perceptions of the Sudanese people on COVID-19 related prevention measures (Nasir et al., 2020). The survey was based on HBM constructs, and dispersed via social media outlets, individuals, and internet platforms.

The researchers acknowledged the influx of coronavirus information constantly being broadcast to the public. The researchers recognized that this constant exposure keeps and shapes an individual's emotional and behavioral responses toward COVID-19, primarily manifesting in the emotion of fear. Additionally, the public must engage in infection prevention actions listed in outbreak management strategies, as it is a major factor in reducing infection transmission, when no treatment or vaccination against the illness had been developed.

Statistical findings yielded that most of the participants either agreed or were neutral to the perceived susceptibility statements. Most participants agreed, or strongly agreed with the statements regarding perceived severity, self-efficacy, and the advantages of handwashing.

Statements referencing each specific HBM construct were dichotomized, resulting in contributor's scores being distributed nearly equally among all constructs (ranging from 52% to 60%). The most significant findings were that females perceived higher

benefits of, and barriers to, social distancing. Participants with a history of recent medical intervention perceived higher susceptibility than other demographic subgroups. Those with lower education levels perceived higher benefits to hand washing. Those with respiratory complications perceived higher susceptibility to, and severity of, coronavirus infection.

The findings suggest that individuals are more likely to comply with recommended preventative behaviors if they perceived high susceptibility of infection and elevated perceived severity of infection, resulting in severe adverse outcomes. Additionally, perceived barriers, and perceived benefits are major influences on individuals' decisions to engage in preventative measures. The most important finding of this study was that nearly all constructs of the HBM were significantly correlated with each other. The study concluded that while it is vital to address each construct of the HBM when applying the constructs to research, that once applied directly to the individuals, a change in one construct will influence another construct.

At its core, HBM is a value-expectancy theory, in which reinforcements and incentives do not directly affect action, but an individual's value assigned to a preventive action must yield a high enough likelihood of success (no illness) to be worth the investment of their own effort in doing so. Pertaining to this study, the mother must feel that her investment in a preventative measure, or practice, is worthwhile enough to keep from contracting coronavirus, or COVID-19, for her to engage in a behavior, versus doing nothing at all. While studies are added daily, there has not been specific focus on how the HBM can be applied to understanding knowledge, beliefs or health behaviors of mothers facing the COVID-19 pandemic.

Foundational Knowledge

Scientific reasoning is linked to lesser susceptibility to cognitive biases and belief in less efficacy of alternative medicines. Scientific reasoning is the critical thinking ability that assists with an individual's ability to reason about any complex content (Cavojova, Šrol & Mikušková, 2020). Literacy of scientific terminology is crucial to assuring that a population can effectively comprehend the information disseminated to them. Research suggests that people with better scientific reasoning tend to have more scientific knowledge (Downs, de Bruin,& Fischhoff, 2019), and at the very least, have acquired skills of evaluating evidence, can better interpret numerical information (Drummond & Fischhoff, 2008), and apply analytical thinking to predict their likely outcome of engaging in a health behavior (Drummond & Fischhoff, 2017).

A common definition of health literacy is the "degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions (Ratzan, 2000)." In short, health literacy connects the scientific body of knowledge into health-promoting actions.

The state of the current pandemic has exposed people to much more medical knowledge (language) than they may ever have been exposed to before. Complex virology, the process of vaccine development and discussion of health policy are now the hot topics of conversation on nearly any media platform, and discussions relating to the coronavirus are held by almost any person you can encounter. Several studies have been conducted to assess individuals' knowledge levels of coronavirus and COVID-19 information (Khasawnah et al., 2020; Bhagvathula, 2020; Zhong et al., 2020). A major irony is that although anyone can access information regarding coronavirus illness or

COVID-19, not everyone understands the information presented in the literature, and in fact has them dismiss the information. Even more insidious is the increased spread of disinformation. A study conducted by Bursztyn et al. (2020) found that areas of the United States that were exposed to television programming that softened the severity of coronavirus saw higher numbers of cases and resulting deaths. A February 2020 Situation Report issued by the WHO characterized the threat of myths and rumors circulating across varying media channels, as an "infodemic", posing a major danger towards public health initiatives related to coronavirus (Situation Report-13, 2020).

Medical Students and COVID: Knowledge, Attitudes and Precautionary Measures

A descriptive cross-sectional study was dispersed to medical students of all year classifications, from the six medical schools housed in Jordan (Khasawnah et al., 2020). A total of 1,404 participants provided data for analysis. Results yielded that surprisingly, when searching for coronavirus information, 38% of medical students reported to use social media all or most of the time, and 45.6% of students used it occasionally. Conversely only 27% of students consulted a medical database for current information, including medical literature search engines. Shockingly, 35.9% of the students surveyed never used either option to obtain appropriate knowledge of information regarding the pandemic.

The students' levels of knowledge were assessed, and results determined 91% of participants were certain that the virus was transmissible via inhalation of infected droplets. Over 93% also assumed the virus was transmissible through direct physical contact, such as kissing, handshaking, exposure to contaminated surfaces, including skin to skin contact. Furthermore, 95% of students believed that individuals that suffered from

chronic illness were the most highly susceptible population to COVID-19. However, only 19.3% of students believed that wearing a mask was effective against COVID-19 transmission, and 60.6% believed that the responsibility of wearing a mask should only be required of the person who is ill. Only 75% percent of students believed with certainty that development of an effective vaccine would halt COVID-19 spread.

Also, the vast majority of these students practiced an increase in hygienic practices to reduce the chance of COVID-19 infection, with handwashing being the most referenced preventative practice (>80%). Closely following in the rankings, students claimed to adhere to practicing social distancing, and refraining from mass public gatherings, including public transportation, as a major preventative measure (70.0%). Most astonishingly, only 9.7% of students believed that wearing a mask was a protective measure against coronavirus infection. Overall, the participants assessed possessed a good foundational knowledge of COVID-19 and relevant information. The heavy reliance of the medial students in receiving the majority of their knowledge via social media was remarked as concerning by the researchers. The finding reflected a need for "higher visibility" of reliable informative sources, stating that navigation and access to credible medical websites should be improved upon. On the concept of infection transmission, researchers also found that the difference in beliefs about airborne versus respiratory droplets could have been confusing to the participants, due to similarities in the definitions of each term, including particle size of the droplet.

Additionally, the researchers were perplexed by the findings regarding precautionary measures. While participants did admit in overwhelming response to adopting trusted preventive measures, such as increasing the frequency of handwashing,

increasing their personal hygiene, and practicing social distancing, very few chose to wear masks in public, and also held weak views of the effectiveness of the general population wearing face masks as a preventative measure. Overall, the knowledge and attitudes of the participants regarding COVID-19 were as to be expected, except for face mask-wearing. The study concluded that countries seeing increases in cases and prevalence should focus more on methods to disperse quality medical-based information to the population, especially to those seeking to become medical professionals within the next few years.

Finally, these researchers stated that students should be properly guided to preferred and trusted sources of medically based information. The study asserted that by universities using their social media as a method to disseminate trusted information regarding the pandemic, then the baseline knowledge level of the students, as well as their attitudes and beliefs on coronavirus, would improve drastically. This would result in an increase in preventative health practices and expansion of foundational coronavirus knowledge.

This study was reviewed in great depth by the researcher, due to the researcher's reliance on the structure of the survey and the types of analysis used to identify relationships between variables influencing preventative behaviors, and mental constructs. Additionally, the content of the questions, as well as the logic and order of questions, was used by the researcher to structure the survey, which would be dispersed to this study's participants.

Complementary and Alternative Medicine

Coupling the fear from a novel pathogen, and lack of information on how to best protect oneself from infection, has led many to explore the world of CAM. As the body's immune system fights against the typical slew of threats to health, individuals count on the introduction of CAMs into their bodies to bolster their immune systems, in an attempt to overpower a pathogen from developing into full-blown illness or once it is an illness with symptoms, to cure it. Popular methods of CAMs are found referenced in numerous sources, however, the significance of their true effect on protecting or healing the body varies immensely (Staud, 2011). Nevertheless, this does not deter people from continuing to find the best CAM to help attain optimal health.

Mainardi et al. (2009) found that over 80% of the world's population relies on CAM methods. Across the United States (U.S.), CAM usage has become increasingly popular, with over $34 billion invested in CAMs annually by consumers. Mainardi also asserted that even with Western medicine's world class treatments and therapeutic techniques, over 70% of the nation's population integrates CAMs into their lives. CAM usage is thought to be a "natural", "holistic", and thus, "safe", therapeutic choice. However, numerous studies reflect individuals low report rate of CAM usage to their physicians (Tasaki et al., 2002; Cuzzolin, 2003), resulting often in adverse reactions from treatments that should be effective in treating ailments (Jacobsson et al., 2009).

Nilashi et al. (2020) highlighted the recent surge in CAM usage, regarding COVID-19, concluding that although past research has established useful knowledge foundations, insufficient information specifically regarding COVID-19 and CAM flourished, creating a false sense of validity that any product would be effective against

the pathogen. Furthermore, in May 2020, the United States Federal Trade Commission sent out 45 more letters to organizations that were claiming to manufacture or apply coronavirus prevention, treatment options, or cures, increasing their total to 120 organizations(Fair, 2020). This included organizations that promised to heal coronavirus through musical wavelengths, chiropractic care that will strengthen your immune system, and antiviral tinctures that could reverse a positive coronavirus test, overnight. While the claims remain baseless with no substantial clinical evidence to back their assertions, hundreds of thousands of people continue to pour their paychecks into these pursuits in an attempt to obtain optimal health, all the while detracting their attention from proven clinical findings that could better benefit their health status.

Accounting for all these factors, I sought to illustrate what CAM usage looks like in the eyes of a modern U.S. mother. In chapter 3, the methods section, I describe the method of my study, how I attempted to analyze the data, and translate it to into relevant findings.

Chapter 3: Methods

Survey Participants and Plan

Participants were identified as belonging to five semi-private Facebook groups (see Appendix B), created to provide a community forum for the discussion of shared experiences as mothers. The survey was dispersed into the groups, as a post with an attached hyperlink to the survey. The study's inclusion criteria included: 1) that women have given birth to or who have adopted at least one child, thus categorizing them as a mother, 2) they are older than 18 years of age, and 3) they are English readers. The study's exclusion criteria included; 1) males, children ages 17 years and younger, and non-English readers.

All of the Facebook groups differed in their origination date, and specific purpose, but the one unifying theme they held in common was the opportunity to share the experiences of motherhood. Topics of discussion in the groups included breastfeeding and general feeding concerns, language development, child developmental milestones, reviews of consumer goods, relationship advice and maternal physical and mental health insights. Any mother or expectant mother could join and comment on posts, so long as they adhered to the Facebook's General Guidelines, as well as the groups' individual rules and policies. For example, nearly every group stated that the advice received in posts, should not ever be placed in higher regard, or in lieu of medical or legal advice. While many mothers depended on the conversations from the groups to provide valuable insight into common issues nearly every mother will face, there was an understanding that responses posted in the forum were only opinion and that mothers should always defer to the opinions of professionals, over the group consensus. Lastly, all of the groups

served to empower the mother's decision on the best way to care for her child, and intended on providing a network of support to instill confidence in the mother, as she navigated the challenges and rewards of motherhood.

Data Collection

Survey Dispersion

The survey relied on convenience sampling. This occurred through survey distribution via Qualtrics. Qualtrics is a user-friendly web-based survey tool, used to conduct survey research, evaluations, and other various data collection actions. Qualtrics embraces a simplified point and click interface, where the user can create clean and organized surveys, with an array of built-in tools for selecting the type of question formatting, uploading multimedia files, and exporting data into specialized file types for statistical analysis. An invitation to the electronic survey was dispersed via Facebook, to the targeted "motherhood" groups. After a participant completed the study, she was encouraged to forward the link to one other mother for completion, thus recruiting through a method known as snowball sampling (Patton, 1990). The survey link remained open for a period of two months, spanning from 01/01/2021 to 02/28/2021. Participants were allowed to complete the survey only once, during that time frame. Every week, the survey link was reposted to each of the five private groups, as a reminder for potential participants to engage in the study.

Survey Tool

The survey collected questions regarding demographic information, personal coronavirus experiences, HBM construct questions, and coronavirus knowledge, beliefs, and attitude questions (see Appendix C). These categories comprised a total of 59

questions. There were 7 demographic questions, 10 personal coronavirus experience questions, 24 HBM questions, 6 coronavirus knowledge questions, and 12 coronavirus attitudes and beliefs questions. Responses were formatted in open response for numerical values, multiple choice, yes or no, and Likert scales.

Data Processing

Sample Size

The sample size for this study was established by creating a range of needed participants, determined by combining two methods: Central Limit Theorem (CLT), and sample size calculations. First, CLT states that the "sampling distribution of the sample means approaches a normal distribution as the sample size gets larger," and that this is more likely to occur, if the population total is greater than or equal to 30 participants (LaMorte, 2016). Therefore, n=30 was determined to be the minimum number of participants needed for this study to be analyzed effectively. Secondly, the top end of the range was calculated using the standard sample size formula (Sullivan, 2005) of:

$ss = Z^2 * (p) * (1-p) / m^2$, where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = population proportion= .36 used for sample size needed- to represent the 36% of adults in the U.S. who ascribed to using CAM in some capacity within the last year (Barnes et al., 2002).

m = margin of error, expressed as decimal

The researcher determined that the z-value would remain 1.96 to indicate a 95% confidence level, the population proportion would be 36% or 0.36, and the margin of

error would be 5% or 0.05. This resulted in a predicted sample size of 353.9, rounded to 354.

Analyses

The Qualtrics software exported the data into a Microsoft Excel spreadsheet. The data from Excel was then uploaded to SPSS, reformatted and prepared for analysis. The proposed analysis plan included running descriptive statistics on the data, followed by bivariate analysis, to include Chi-square and ANOVA tests. After all significant variables from the bivariate analysis were identified, multiple regression models were run to control for confounders.

Consent and Approvals

Reponses recorded by each participant remained anonymous. Participation in the survey was voluntary, and consent was implied by the completion of the survey. Prior to the creation of the study focus, the researcher completed a Social & Behavioral Research Certification offered by the Collaborative Institutional Training Institute (CITI), as a requirement of the University of Texas at Tyler. Additionally, The University of Texas at Tyler's Institutional Review Board evaluated and approved this study's ethics (Appendix D).

Chapter 4: Research Results

The following chapter presents the analysis of the participants' responses from the survey. Data from a total of 100 respondents was used in analysis.

This chapter is divided into three major sections. This first section describes the respondents' demographic makeup, and explores analytical relationships between CAM, HBM, and other mental constructs.

Demographics

The mean age of survey participants was 34.2, with a range of 19-60 years of age. Most respondents ethnically identified themselves as White (77.6%). The majority of survey participants identified as married (68.2%). Most respondents stated that they were employed outside of the home (74.1%). The average number of children was 2.1, with a range of 1-6. This figure was higher than the national average, which sits at 1.93 as of 2020 (Statista, 2021).

The majority education level was possessing a college degree (55.3%), whereas 14.1% of mothers had an Associate's degree, 30.6% had a Bachelor's degree, and 10.6% had any graduate degree (Master's, PhD, MD, JD, etc.). Lastly, the survey revealed an average household income of $4,427, per month. This was lower than the 2020 national average monthly salary of $5,725 (Kopestinsky, 2021).

CAM by Demographics

Table 1 shows the demographic characteristics, related to usage of CAM for prevention and treatment, in relation to each of the demographic variables collected from respondents.

Table 1: CAM use by Demographics; p-value

	CAM Prevention		P	CAM Treatment		P
	Yes	No		Yes	No	
Age[a] average years	36.13 (n=16)	32.40 (n=30)	.157	41.20 (n=5)	32.83 (n=42)	.035**
Income[a] ave. monthly $	4634.00 (n=13)	4343.96 (n=26)	.873	6943.33 (n=3)	4361.36 (n=33)	.436
# Children[a] average	2.3 (n=23)	2.1 (n=54)	.524	2.4 (n=10)	2.1 (n=65)	.504
Ethnicity[b] White Non-white	 18 (78.3%) 5 (21.7%)	 43 (79.6%) 11 (20.4%)	1.00†	 8 (80.0%) 2 (20.0%)	 52 (80.0%) 13 (20.0%)	.670
Employment[b] Outside of the home Not outside… home	 14 (56.0%) 9 (44.0%)	 41 (75.9%) 13 (24.1%)	.148	 10 (100%) 0 (0%)	 43 (66.2%) 22 (33.8%)	.018†**
Education[b] < college degree Any degree	 6 (26.1%) 17 (73.9%)	 28 (51.9%) 26 (48.1%)	.088†*	 4 (40.0%) 6 (60.0%)	 28 (43.1%) 37 (56.9%)	.739
Marital status[b] Single Married	 5 (21.7%) 18 (78.3%)	 20 (37.0%) 34 (63.0%)	.128	 5 (50%) 5 (50%)	 20 (30.8%) 45 (69.2%)	.141

**p<.05; *.10>p=>.05; a= T test/ANOVA, b=Chi Square test; †=Fischer's Exact Test

Independent T-test analysis generated a significant finding that older mothers were more likely to use CAM for treatment of coronavirus infection or COVID-19, as compared to younger mothers (p=.035) shown in Figure 1. Additionally, employment status influenced mother's decision to use CAM to treat coronavirus illness, with those employed more likely to use CAM (p=.018); Figure 2.

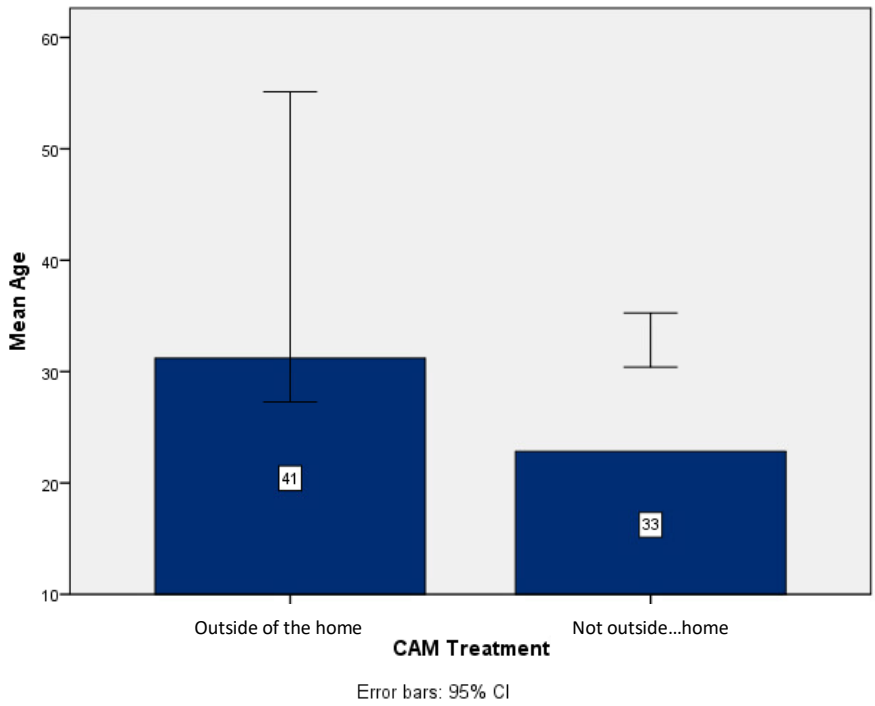

Figure 1. CAM Treatment by Mean Age

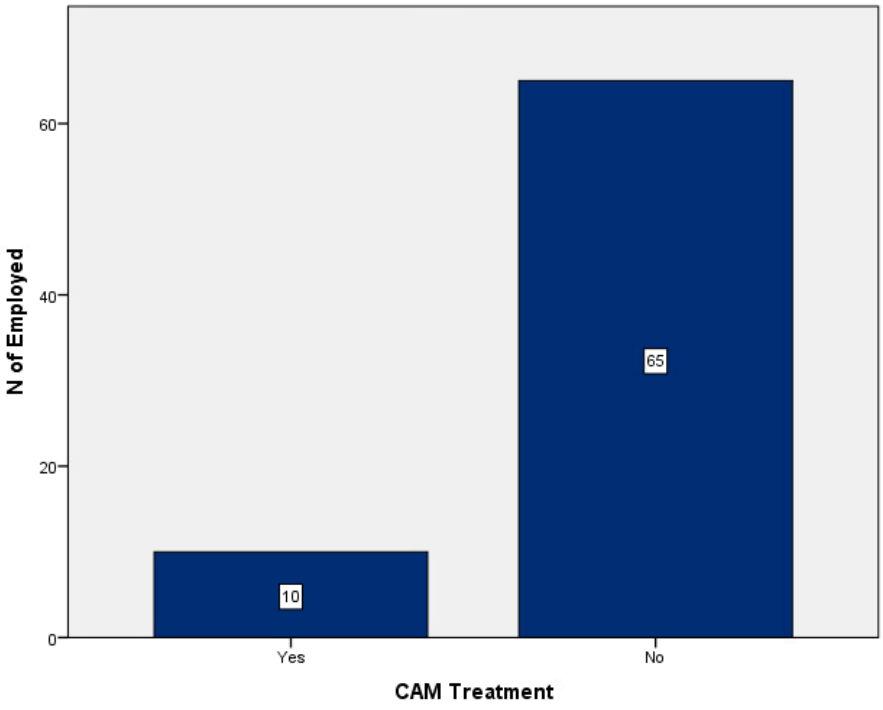

Figure 2. CAM Treatment by Employment Status

No associations between CAM prevention, or CAM treatment of coronavirus illness or COVID-19 and income, number of children, ethnicity or marital status were found to be significant. However, of marginal importance was education, which showed that those with some college experience were less likely to use CAM for prevention against COVID-19.

Health Belief Model by Demographics

Below, Table 2 shows the four primary HBM construct mean scores, by demographic characteristics of participants.

Table 2: HBM Construct Slope or Average by Demographic group; p-value

	Perceived Susceptibility	P	Perceived Severity	P	Perceived Benefit	P	Perceived Barrier	P
Age[a] (slope)	-.035	.418	-.01	.729	-.009	.728	-.116	.094*
Income[a] (slope)	$1.26E^{-5}$	.809	$-7.25\ E^{-5}$	.201	$5.19\ E^{-5}$	.395	$-5.39\ E^{-5}$	.666
# Children[a] (slope)	-.063	.795	-.021	.904	-.165	.321	.224	.550
Ethnicity[b](ave.)		.285		.982		.355		.644
White	12.0		11.84		13.64		17.71	
Non-white	13.0		12.41		14.61		17.75	
Employment[b] (ave.)		.989		.147		.721		.908
Yes	12.15		11.9		13.9		17.42	
No	12.18		12.1		13.8		18.31	
Education[b] (ave.)		.048**		.791		.991		.395
< college degree	12.6		12.2		13.5		18.4	
Any college degree	11.8		11.8		14.0		17.1	
Marital status[b] (ave.)		.290		.182		.099*		.283
Married	12.2		12.0		13.7		17.1	
Not Married	12.0		11.9		14.3		18.8	

**p<.05; *.10>p=>.05; a= regression (slope), b=independent samples T-test (averages)

Analysis yielded that mothers without a college degree significantly incurred higher scores of perceived susceptibility to contracting coronavirus, compared to their higher educated counterparts (p=.048), illustrated in Figure 3.

Additionally, younger women were more likely to have higher perceived barrier scores as compared to older women, although this finding was only marginally significant (p= .094), shown in Figure 4. Furthermore, non-married mothers expressed marginally more benefits to protect against coronavirus infection, than married mothers (p=.099) (Figure 5).

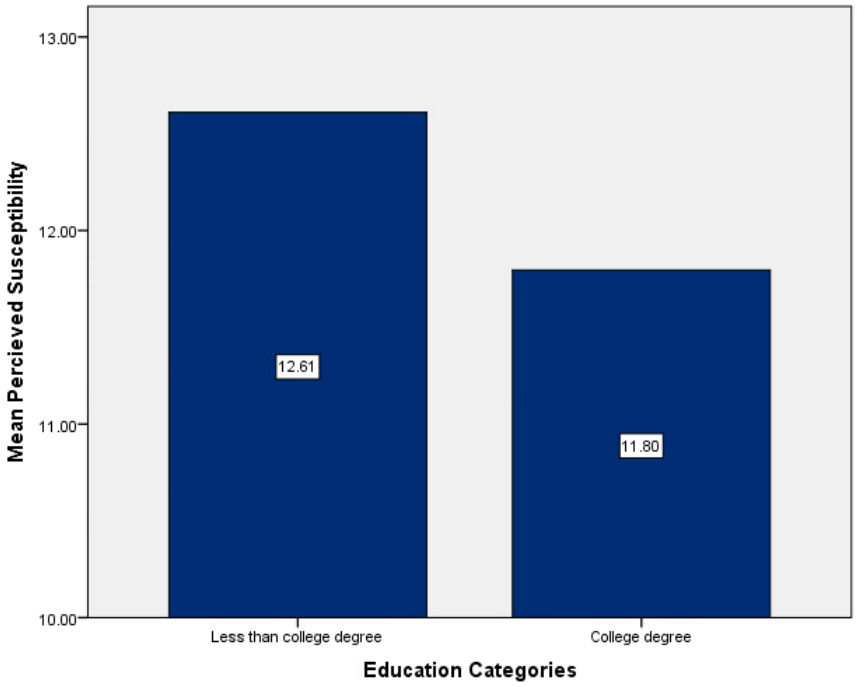

Figure 3. Education categories and mean Perceived Susceptibility scores.

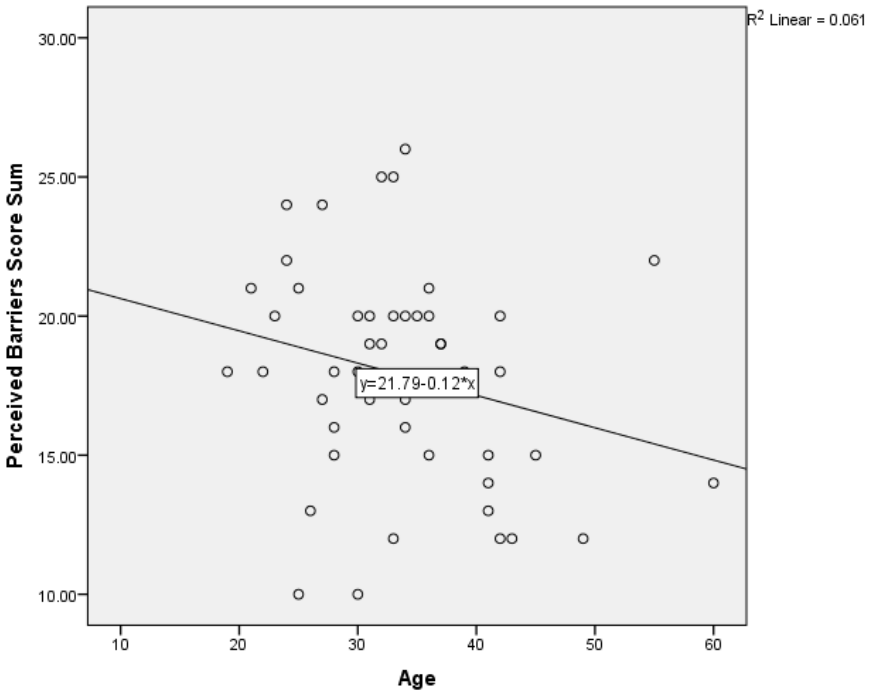

Figure 4. Scatterplot of age in relation to Perceived Barrier scores

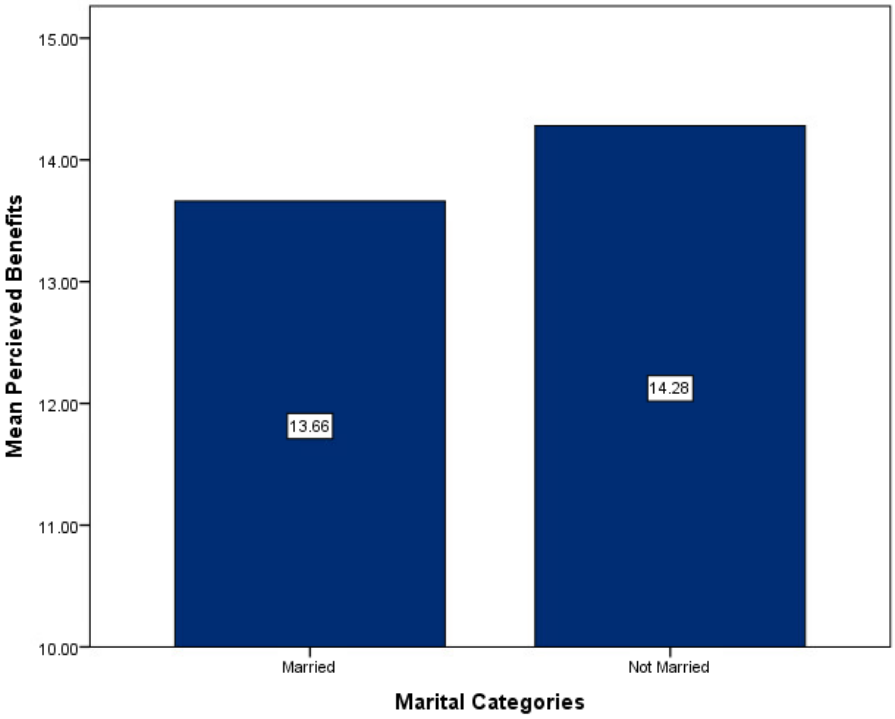

Figure 5. Marital categories and mean Perceived Benefits scores

All other associations between the Health Belief Model scores and demographic groups were non-significant.

Other Mental Constructs by Demographics

Table 3 reveals the knowledge, attitudes, and self-efficacy mean scores, in relation to demographic characteristics of the respondents. The range for knowledge was 14 (12-26); for attitudes it was 24 (18-42); for self-efficacy it was 4 (1-5).

Table 3: Knowledge, Attitude and Self Efficacy Slopes or Averages, by Demographics; p-value

	Knowledge	P	Attitudes	P	Self-efficacy	P
Age[a] (slope)	.009	.851	.004	.961	-.002	.888
Income[a] (slope)	.000	.115	$-2.53E^{-5}$	.839	$-2.2\ E^{-5}$	.451
# Children[a] (slope)	.164	.500	-.031	.944	-.046	.550
Ethnicity[b] (avg.)		.166		.421		.195
White	64.1		58.8		66.2	
Non-white	17.9		14.4		19.7	
Employment[b] (avg.)		.164		.528		.832
Yes	59.3		50.1		63.6	
No	22.8		22.3		22.9	
Education[b] (avg.)		.161		.480		.220
< college degree	36.2		33.6		38.3	
Any college degree	45.7		39.4		47.8	
Marital status[b] (avg.)		.531		.008**		.149
Married	56.5		50.4		58.9	
Not Married	25.4		22.8		27.2	

**p<.05; *.10>p=>.05; a= regression (slope), b=independent samples t test (%)

Analysis indicated that marital status significantly influenced mothers' coronavirus attitudes scores, with married mothers having higher attitude scores than their non-married counterparts (p=.008) (Figure 6).

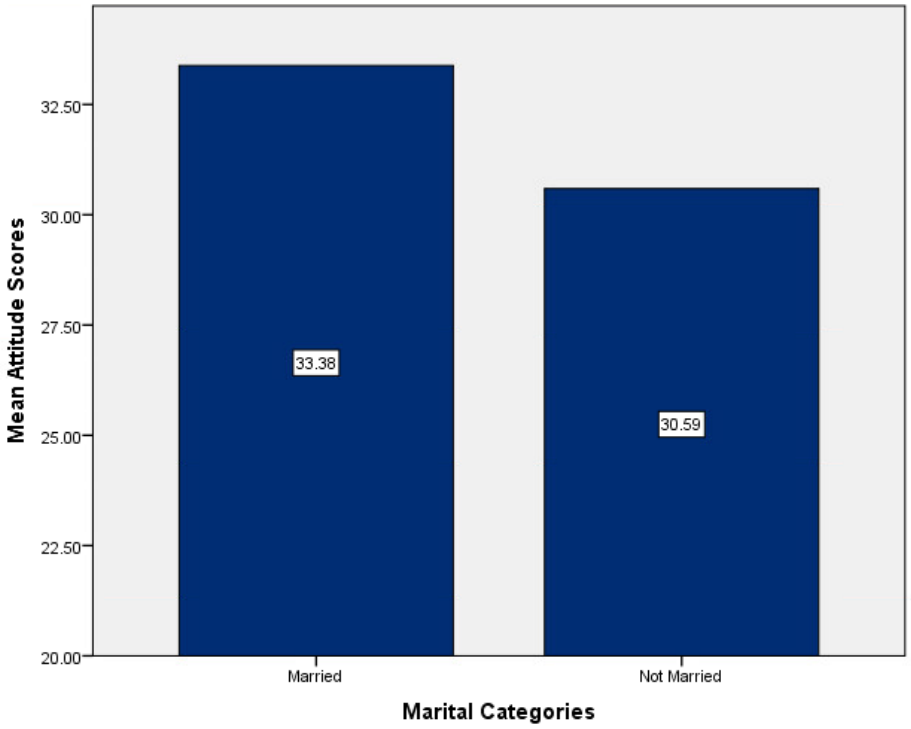

Figure 6. Marital Categories and mean Attitude scores.

No other associations between the knowledge, attitude or self-efficacy scales and demographics were significant.

Table 4. CAM Usage by HBM Construct; p-value

Constructs of the HBM	CAM Prevention		P	CAM Treatment		P
	Yes	No		Yes	No	
Perceived susceptibility[a]	12.6 (n=22)	11.9 (n=54)	.221	13.6 (n=10)	11.9 (n=64)	.049**
Perceived severity[a]	11.6 (n=22)	11.9 (n=54)	.984	11.8 (n=10)	11.9 (n=64)	.850
Perceived barriers[a]	18.4 (n=22)	17.4 (n=54)	.333	14.6 (n=10)	13.8 (n=64)	.815
Percieved benefits[a]	14.0 (n=22)	13.7 (n=52)	.471	17.9 (n=10)	17.6 (n=62)	.172

**p<.05; *.10>p=>.05; a= T test/ANOVA

Table 4 displays an analysis of the four main constructs of the HBM on CAM use. Perceived susceptibility significantly influenced mother's decision to use CAM for coronavirus treatment (p=.049) (Figure 7).

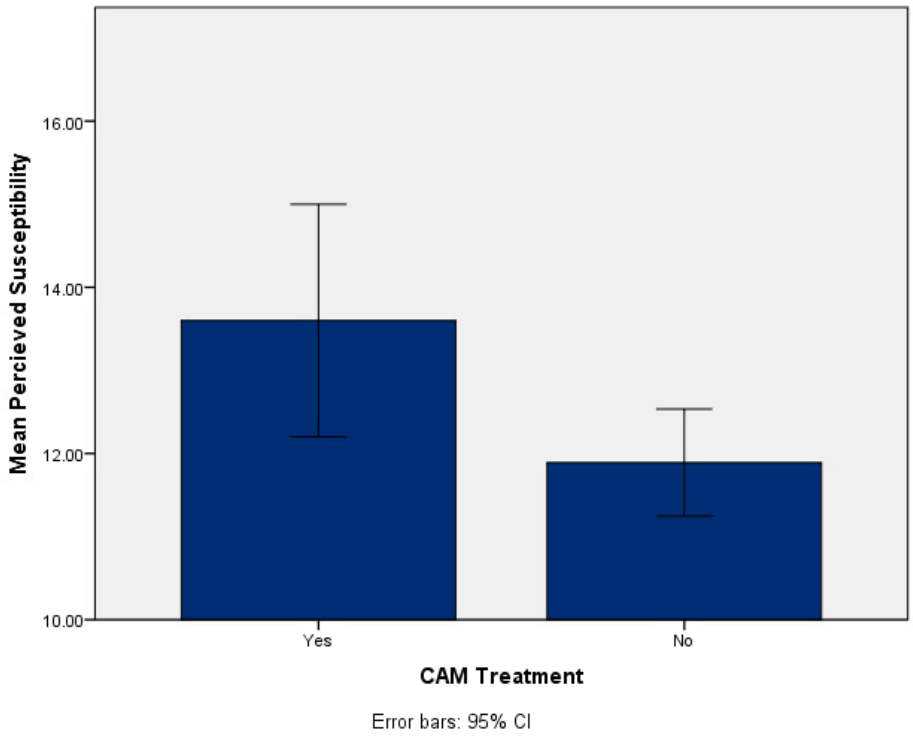

Figure 7. CAM Treatment and mean Perceived Susceptibility scores

None of the remaining HBM constructs significantly influenced CAM usage for coronavirus prevention or treatment.

Table 5. CAM Usage by other Mental Constructs; p-value

	CAM Prevention		P	CAM Treatment		P
	Yes	No		Yes	No	
Knowledge[a]	19.5 (n=22)	18.1 (n=54)	.018**	18.5 (n=10)	18.4 (n=64)	.872
Attitudes[a]	33.6 (n=22)	31.8 (n=47)	.088*	31.8 (n=9)	32.4 (n=57)	.665
Self-efficacy[a]	1.7 (n=23)	1.5 (n=54)	.281	1.5 (n=10)	1.6 (n=64)	.765

**p<.05; *.10>p=>.05; a= T test/ANOVA

Analysis of additional mental constructs revealed that knowledge significantly influenced mothers' decision to use CAM for coronavirus prevention with higher knowledge related to CAM use (p=.018) (Figure 8).

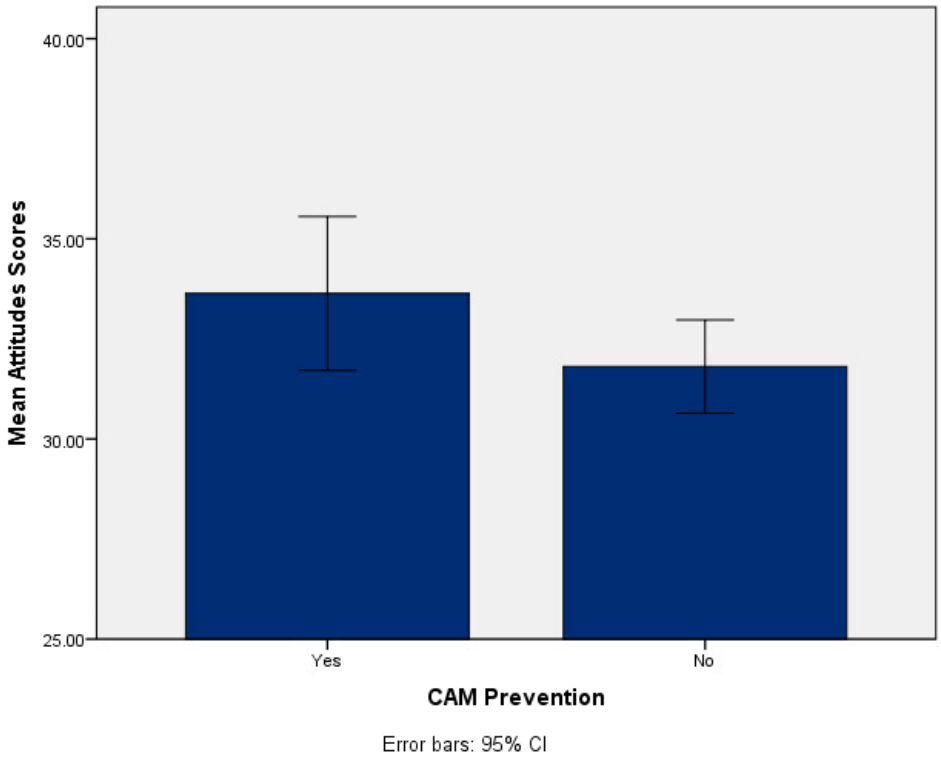

Figure 8. CAM Prevention and mean Knowledge scores

Additionally, attitude scores were marginally significant in influencing CAM for prevention with the better attitude scores associating with CAM use (p=.088) (Figure 9). Self-efficacy did not significantly influence CAM usage for either prevention or treatment against coronavirus. For that matter, no other mental construct influenced CAM usage for treatment purposes.

Next, correlational analysis was used to examine the relationship between continuous demographic variables, HMB constructs, and other mental constructs.

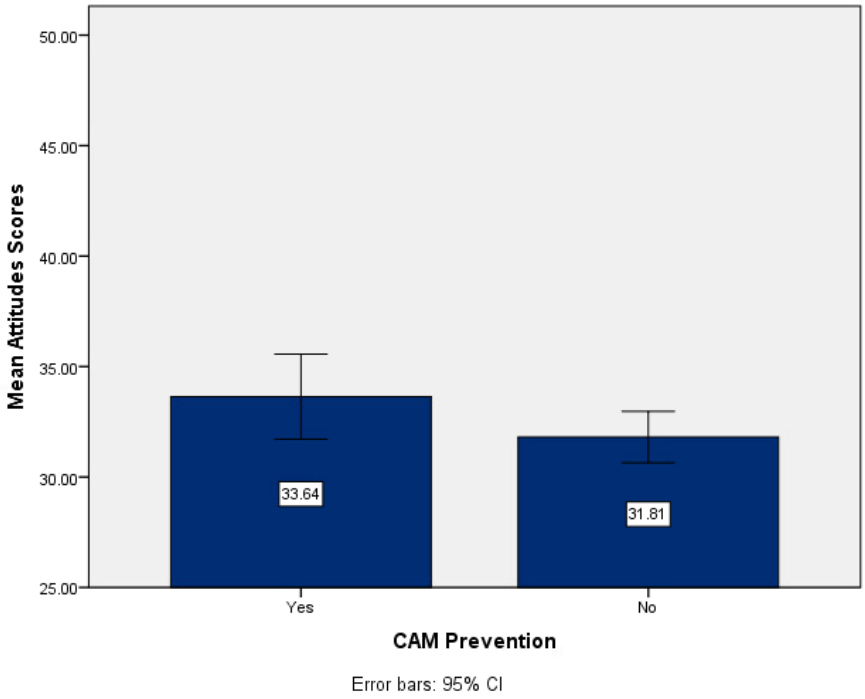

Figure 9. CAM Prevention and mean Attitude scores

Table 6. Bivariate Correlation

	Income	Children	Perceived Susceptibility	Perceived Severity	Perceived Benefits	Perceived Barriers	Knowledge	Attitudes	Self-efficacy
Age	.090	.278	-.121	-.052	-.042	-.247	.028	.008	-.020
Income		.036	.023	-.207	.138	-.071	.253	-.034	-.121
Children			-.030	-.014	-.112	.068	.076	-.008	-.066
Perceived Susceptibility	.			.255*	.313**	.206	.254*	.220	-.140
Perceived Severity					.148	.146	.059	-.005	-.283*
Perceived Benefits						-.052	.105	.166	-.327**
Perceived Barriers							.041	.064	.087
Knowledge								.293*	-.167
Attitudes									-.226

*p<=.05; ** p<=.01

There was a significant positive correlation between perceived susceptibility and perceived severity (p=.023), and perceived susceptibility and knowledge scores (p=.024). There was also a significantly positive relationship between knowledge and attitude scores (p=.012). There was a significantly negative relationship existing between perceived severity and self-efficacy scores. A strong correlation existed in a significant positive relationship between perceived susceptibility and perceived benefits scores (p=.005). The strongest correlation was a significantly negative relationship between perceived benefits and self-efficacy scores (p=.003).

Hypothesis Testing

The second section checks analysis to respond to the three hypotheses stated by the researcher in Chapter 1: 1) "The construct of perceived severity of the HBM will mostly likely influence the adoption of CAM usage." This has already been answered in Table 4, where analysis yielded insignificant findings in both CAM prevention (p=.984) and CAM treatment (p=.850). Perceived severity has no relationship with CAM usage. 2) "Mothers with lower education levels, or lower coronavirus knowledge scores will not be as likely to engage in preventative behaviors or CAM usage to reduce the chance of coronavirus transmission or infection." This hypothesis was answered in two parts; the first in Table 1, where education level was found to be marginally significant in showing that mothers with some college experience (but no degree) were more likely to not use CAM for prevention against coronavirus illness. However, no associations between education levels and CAM usage for coronavirus treatment were found. The second part of this hypothesis was answered in Table 5, where analysis yielded that knowledge scores significantly influenced mothers' decisions to use CAM for prevention (p=.018), but did

not significantly alter mothers' decision to use CAM for coronavirus treatment (p=.872). 3) "Older mothers (aged 36 years or older) will be less likely to participate in CAM usage, than younger mothers (aged 18-35)". A Chi-Square test was completed, which yielded unsignificant findings related to the categorical division of age, in relation to CAM usage, however uncategorized age was found to be a significant influence on mothers' decision to use CAM for coronavirus treatment (p-value=.035), as seen in Table 1.

Logistical Regressions

The last and final results section uses multiple regression to predict CAM prevention or CAM treatment for several variables together. Taking the significant and marginally significant variables from bivariate analysis (Tables 1, 4 and 5), a logistical regression model was assembled and run. For CAM prevention, the independent variables that emerged were education, knowledge, and attitudes. For CAM treatment, the independent variables that emerged were age, treatment, and the HBM construct of perceived susceptibility. Tables 7 and 8 show those results.

Table 7: Logistical Regression: Factors Associated with Predicting CAM Usage for Prevention of Coronavirus Infection

	Unadjusted p-value	Unadjusted Odds Ratio (95% C.I.)	Adjusted p-value	Adjusted Odds Ratio (95% C.I)
Education	.018**	.239 (.073 - .786)	.021**	.247 (.076 - .809)
Knowledge	.050**	.790 (.624 – 1.00)	.018**	.759 (.604 –.954)
Attitudes	.193	.909 (.786 – 1.05)	N/A	N/A

**p<.05; backward logistical regression, 3 iterations

Without controlling for other variables, education level, knowledge, and attitude were found to significantly associate with CAM prevention. Furthermore, education level, controlling for knowledge and attitudes, significantly predicted CAM

prevention. The higher the education level, the more likely CAM is used for prevention purposes. This likelihood is also quantified, one is 70% more likely to use CAM for prevention purposes if one has a college education versus no college education.

Likewise, knowledge controlling for education and attitudes predicts CAM prevention. As knowledge increases one is significantly more likely to use CAM to prevent illness. Attitudes, however, did not maintain its importance with CAM prevention, in this model, having dropped out of the model when controlling for education and knowledge (Table 7).

Table 8: Logistical Regression: Factors Associated with Predicting CAM Usage for Treatment of Coronavirus Infection

	Unadjusted p-value	Unadjusted Odds Ratio (95% C.I.)	Adjusted p-value	Adjusted Odds Ratio (95% C.I)
Age	.058	.814 (.658 – 1.007)	N/A	N/A
Employment	.998	391578511.5 (.000)	N/A	N/A
Perceived Susceptibility	.060	.447 (.221 – 1.031)	N/A	N/A

**p<.05; backward logistical regression, 3 iterations

Without controlling for other variables, age, place of employment, and perceived susceptibility were found to significantly associate with CAM treatment. However, in controlling for each other, all three variables dropped out the model (Table 8). Still, we see a trend that the older one becomes, the more likely one would use CAM for treatment of COVID-19, and the higher one's perceived susceptibility is, the more likely one would use CAM for treatment. Yet these were not significant findings.

The next chapter discusses these findings, mentions the strengths and limitations of the study, and draws conclusions about CAM use with mothers.

Chapter 5: Discussion

Developments

Since the thesis proposal in the fall of 2020, progress was made regarding coronavirus research and vaccine development. The WHO Director General, Dr. Tedros Ghebreyesus, asked for worldwide collaboration for all to engage in practices to minimize infection spread, while also calling on major organizations to commit to the development of the vaccine. In mid-November 2020, over $360 million was donated to COVAX to accelerate the development of COVID vaccinations (WHO, 2020). Although development of the vaccine would be crucial to minimizing and eventually blunting the pandemic, the Director General also emphasized that a vaccine would not alone end the pandemic, but that all public health measures that had been adopted over the previous year would need to continue in order to keep case counts low. The G20 Summit met at the end of November 2020, and proposed an investment of $4.5 billion for vaccine development, paired with measures of guidance to help governments develop vaccination deployment strategies when vaccines finally became available for dispersal (European Council, 2020).

Vaccines

On December 14, 2020, the first COVID vaccination was administered to an ICU nurse in New York City (BBC News, 2020). The Advisory Committee on Immunization Practices (ACIP) established guidelines for the appropriate phasing of vaccination dispersal to the American population (Dooling et al., 2020) followed by the WHO issuance of the first emergency use validation for COVID-19 vaccination on December 31, 2020 (WHO, 2020). This designated health care workers and elderly patient over the

age of 65, as being priority to receive first doses of vaccinations. Clinics in the United States stayed open for extended hours for six to seven days a week, to assure that as many people as possible could access the vaccination outside of working hours.

As of November 1, 2021, there were three major vaccination brands that have met criteria to be dispersed (CDC, 2020):

- Johnson & Johnson's Janssen vaccine,
- Moderna vaccine,
- Pfizer-BioNTech vaccine.

The CDC encouraged people to vaccinate themselves against coronavirus as soon as they were eligible to. A web page dedicated specifically to COVID-19 vaccinations outlines common side effects, as well as the process of how the vaccinations help keep a body healthy (even if they have already experienced coronavirus illness prior to receiving the immunization), and how being fully vaccinated can segue one back into a normal lifestyle (CDC, 2020).

As vaccines were being rolled out on a larger scale across the U.S. population, vaccine hesitancy remained constant. The side effects that some people suffered after their vaccination left many people feeling uneasy about receiving the vaccination. A false, common belief with many women was that vaccination could impact fertility, based on the absence of information. For the most part, minor side effects included arm soreness, fever, headache, tiredness, which are typically common with many types of vaccinations (Golden, 2020).

As of November 1, 2021 over 6.8 billion COVID-19 vaccination dosages have been administered, worldwide. As vaccination uptake increases, still many countries are

unable to cope with the disease burden. Currently most health organizations with surplus resources, are sending oxygen and critical supplies to these facilities (Direct Relief, 2020). While some countries are rolling back public restrictions, others are still very much in crucial stages of managing the virus.

Feelings of confusion and mistrust in public health were elevated, and likely influenced vaccination hesitancy in the first few months of its availability (Bogart et al., 2021). Through the summer of 2021, the Delta variant fueled the fourth major spike of COVID cases in the pandemic (del Rio, Malani, & Omer, 2021). This is thought to have occurred due to the plateau of vaccination rates the occurred around the same period, paired with many socially restrictive policies being lifted, and people practicing more relaxed social distancing measures. As of November 2021, case counts are trending downward, but recommendations from public health authorities remain the same: stay vigilant, get vaccinated, socially distance where applicable, and wear a mask (CDC, 2021).

Research Updates

The WHO continued to sponsor research collaboratives, with the common goal of focusing research initiatives based on Epidemiology and modeling tools used to identify method of coronavirus spreading, as increased variant strains emerged. As of April 2021, over 1.2 million sequences of the coronavirus had been identified, and that increasing sequence capacity across the world should remain priority research (WHO, 2020).

Political Climate and Public Restrictions

Through the late winter, to early spring (2020-2021) Americans experienced a shift of power, resulting from the presidential election. Swiftly to follow were changes in

policy, mandates and expectations related to social distancing measures, masking, telecommuting, and even vaccination requirements. In less than a few weeks, restrictions were modified, and entire school systems and worksites reverted from limited in-person attendance, to requiring personnel to be present on campus. As beliefs and best practices shifted, we can assume that so did the beliefs of citizens. This fueled feelings of mistrust from the public, in reference to guiding organizations.

The Main Findings

This study aimed to assess the behaviors and cognitions of mothers, in relation to CAM usage for coronavirus prevention and treatment. Additionally, constructs of the HBM, as well as other mental constructs including knowledge, attitudes, and self-efficacy were analyzed. I sought to answer the following three hypothesis: 1) the construct of perceived severity of the HBM will most likely influence the adoption of CAM usage, 2) mothers with lower education levels, or lower coronavirus knowledge scores will not be as likely to engage in preventative behaviors or CAM usage to reduce the chance of coronavirus transmission infection, and 3) older mothers will be less likely to participate in CAM usage than younger mothers

Coronavirus Experience

Regarding COVID experience prevalence, 34% of participants stated that they had, at some point since January 2020, experienced symptoms of COVID-19 infection. 27% of respondents followed up with experienced symptoms and chose to take a COVID-19 test. Only 10% of those who experience symptoms and tested for COVID-19 received a positive test result. Overall, 14% of participants of the entire study tested positive for COVID-19.

CAM Usage for Treatment

The constructs of the HBM and CAM usage for prevention and treatment were analyzed. The test yielded results that perceived susceptibility was the singular HBM construct significantly influencing a mother's decision to use CAM to treat coronavirus illness ($p = .049$). No other HBM construct was significant in impacting mothers' CAM decisions. This finding is unique when compared to other studies in the literature.

As previously stated, the average age for survey respondents was 34.2 years. An independent T-test analysis suggested that age significantly affected mother's decision to use CAM to treat coronavirus illness. This could be due to the fact that as a mothers' age increases, she gains more experience parenting through multiple, or even severe illnesses of her children or immediate family members, and could feel more compelled to minimize illness experienced, therefore adopting a regiment of CAM to assist the recovery process (Landis & Earp, 2008). Age did not stay in a more advanced more advanced model.

A Chi- square test was completed, where analysis yielded results showing that a mothers employment status ("outside of the home") was significantly influencing of her decision to use CAM for the treatment of coronavirus illness. This could be due to the fact that mothers could have felt more at risk leaving the home, or attempted to minimize the days off of work, in order to recover, or assist the recovery of a family member, suffering from coronavirus illness. Like the previous variables, education did not emerge significant from logistic regression.

CAM Usage for Prevention

A Chi- square test was completed, where analysis yielded a marginally significant finding showing that mothers with some college experiences were more likely to not use CAM for prevention against coronavirus illness (p-value= .088). This finding supports the literature reviewed to develop the study, where mothers with higher academic achievements, would be more likely to adopt CAM usage into their care regiment (Rhee et al., 2017). In logistic regression analysis, education stayed in the model, controlling for knowledge and attitude.

In bivariate analysis, both knowledge (p-value= .018) and attitudes (p-value= .088) were significantly influencing a mother's decision to adopt CAM for COVID-19 prevention. In higher model testing, knowledge emerged significant, controlling for education, and attitudes. Attitudes dropped out. Still, these findings could not be supported by any other literature that the researcher was aware of, and therefore, should be prioritized in future studies to assess the potential relationships and impacts the variables can have on CAM usage.

Overall, the thinking processes that drove mother to using CAM for coronavirus prevention (education, knowledge, and attitudes), were very different from the reasons that primed mothers' decisions for using CAM to treat coronavirus illness (perceived susceptibility, age, employment status).

This difference in reasoning could be explored through the three defined categories of health behaviors, as defined by Kasl and Cobb (1996):

Preventative health behavior-activities adopted by an individual who believes they are healthy, and are attempting to prevent or detect asymptomatic illness

Illness behavior- activities adopted by a person who believes they are ill, defines the state of health, and identifies appropriate therapies

Sick-role behavior- activities adopted by a person who considers themselves ill, and seeks to receive treatment, yet adopts an array of dependent behaviors, including exempting themselves from typical responsibilities.

Applying these constructs to this study, would be interpreted that when mothers' engaging in CAM usage for coronavirus illness prevention are doing so with the belief that adopting methods of prevention will benefit health outcomes, or enhance health. However, mothers with higher education levels were less likely to use CAM for coronavirus prevention than non-college degree-possessing mothers. Perhaps mothers with more education did not perceive themselves as "healthy" like Kasl and Cobb's theory (1966) suggests, and therefore were not likely to integrate methods of CAM into their daily regimen. Additionally, more highly educated mothers could have placed less value or benefit in investing in or committing to dispersing CAM methods of prevention against coronavirus illness to their families due to reasons not identified in this study.

Furthermore, the HBM is defined as a value expectancy theory, meaning mothers participating in this study valued improving their health status and treating their coronavirus illness infection. This was expected by utilizing CAM to treat coronavirus illness, based on mothers' increased perceived susceptibility to contracting and suffering from coronavirus infection. Future research should explore developing a complimentary qualitative-focused study to identify values and motivations for adopting CAM usage by mothers, in the pandemic.

Secondary Findings

I found that the majority of survey respondents ethnically identified themselves as White (77.6%), which compliments previous studies showing that non-Hispanic White women utilize CAM at significantly high rates (51.6%) as compared to other ethnic groups (Kronenberg et al., 2006). Additionally, the majority educational level obtained by respondents was "possessing a college degree (55.3%)", with most of the degrees reported were 4-year undergraduate or Bachelors' degrees. This corroborates a previous study that found that college graduate women may be more likely to use CAM. This study also asserts that women were more likely to attribute CAM usage to personal health beliefs, than any other reason, even considering their satisfaction with standard Westernized care (Chao et al., 2009). Furthermore, the majority of survey respondents stated that they were employed outside of the home (74.1%). I chose to frame the question this way to provide an innovation response to the ways that mother's may frame their employment status.

A bivariate correlations analysis was performed to test relationships between key variables, including respondents' demographic makeup, HBM concepts and other mental constructs. The results were presented in Table 6. Analysis yielded two significant findings, discussed below.

First, the construct of perceived benefits had a significantly positive correlation to perceived susceptibility (p-value<=.01). It can be interpreted that as mothers perceived susceptibility to contracting coronavirus resulting in infection, increased, the perceived benefits of adopting CAM usage into their care regimen also increased.

Next, the construct of perceived susceptibility had a significantly negative correlations to self-efficacy scores (p-value<=.01). This can be interpreted that as mothers perceived benefits of adopting CAM usage for coronavirus treatment or prevention increased their coronavirus self-efficacy scores decreased. In simplistic terms, it could be inferred that mothers were more likely to place their confidence in their chose method of CAM to treat or prevent coronavirus infection, rather than their own abilities to adopt health behaviors that would be comparably affective as their preferred CAM modality.

Null findings

Ethnicity

In this study, ethnicity and income were not found to be significant predictors of mothers' utilization of CAM. These results notably contradict the findings from existing literature, which typically suggest racial/ethnic differences consistently existing regarding CAM usage (Rhee et al., 2017).

Regarding income, the literature suggests that income should influence the adoption of CAM, across most demographic groups, yet the salary threshold that determines a predisposition to selecting CAM modalities, varying across each racial/ethnic group (Chao, Wade, & Rosenthal, 2008).

Perceived Barriers

In this study, perceived barriers was found to not significantly influence mothers' adopting of CAM modalities. These findings also contradict textbook definitions of the HBM framework, which cites several studies (Carpenter, 2010; Harrison, Mullen, & Green, 1992) that declare perceived barriers to be the, "most powerful single contrast" of behavior prediction, across the entire model (Glanz et al., 2008). The shift in significance

of what would otherwise be a predictable finding, could be due to the turmoil and upheaval caused to all aspects of life, due to the persistent effects of the pandemic.

Limitations & Strengths

This study has potential limitations. First, the researcher relied on dispersing the survey via social media. This means that all participants had to have the ability to access the Internet, given that it was only available for completion in a digital format. Although the groups in which the survey was dispersed to varied in their mission and purpose, all recipients were still navigated through the survey via links posted exclusively in social media, specifically the Facebook platform. This means that participants potential participants who choose not to utilize Facebook, had a much smaller chance at being exposed to the survey invitation link. A work-around for limiting the method of recruiting respondents, was that the researcher asked participants at the conclusion of the survey, to forward a copied link to potential candidates to initiate a snowball sampling effect. However, once the origin of participant survey was reviewed in the data, it showed that no individuals that participated were sent the link directly, and that all responses came from the groups they had originally posted in. This means that the snowball method of collecting participants by asking participants to forward the survey link to other potentially eligible candidates, was ineffective. Furthermore, participants were not randomized, which may insert bias into the study.

Additionally, this survey focused only on collecting responses from women, but more specifically, women who are mothers. Therefore, the system did not survey did not capture the perspective of a father, which could have yielded more significant findings, since fathers in the U.S. are more actively engaged in parenting than they have been,

historically. The survey also did not consider the perspectives of people without children. Had both groups been included, more generalizability would have been present.

Furthermore, the survey was dispersed just when vaccinations were beginning to become available for the general population. This was about a full calendar year since the beginning of the pandemic. At this time many policies and mandates related to minimizing coronavirus infection and COVID-19 cases had begun to be rolled back, confusing or diluting people's attitudes or beliefs about CAM. The survey could have captured a more accurate look of the beliefs that drove prevention and symptom improvement related to COVID-19, had it been implemented earlier in the pandemic timeline. Also, this survey was only made available to people that could speak fluent English, and was not made available in any other language.

Similarly, another major limitation of the survey design was that I did not create a Hispanic or Latino category in the demographic selections, which may have portrayed a more accurate demographic breakdown of the participants.

A further limitation of the study is that when asked the employment status of participants, only the options of employed in the home, or employed outside of the home were made available to the participants. Employment could have been broken down into more descriptive options, to portray a more accurate picture of the employment status of the participants.

Due to the way in which the survey was distributed to the target population, selection bias is present in this study. It must be acknowledged that the mothers that could access and complete the survey must have been able to meet an underlying set of criteria that was not articulated in the survey's consent page. Mothers had to have stable

internet access, read and comprehend the English language, and be able to associate the behaviors and knowledge questions asked in the survey with their own actions and beliefs. This survey also included recall bias from the sampled population, due to the fact that mothers were asked to recall their previous experience with coronavirus, dates associated with illness and testing, types of CAM used, and knowledge associated with coronavirus. This could have led to inaccurate reporting of data, considering that many months may have passed since the time coronavirus was experienced by the mother, and the survey was completed.

Lastly, a pressing limitation to the survey, was that the researcher ran out of time to run more robust analysis, in respect to coronavirus experience, HBM, CAM, and mental constructs. These relationships should be explored in greater detail, especially in a study based on prevalence and identifying motivations leading the adoption of health behaviors. Therefore, lacking those findings, is a substantial limitation to the study.

Although many limitations to this survey study existed, the researcher still believes that focusing on the targeted population yielded a successfully designed study, to contribute to growing the literature surrounding health beliefs driving behaviors related to coronavirus. Strengths of this study included the cross-sectional survey design, which has been referenced as one of the best methods of capturing prevalence of behaviors, and determining associations of numerous exposures and outcomes (Wang & Cheng, 2020).

Another strength of the study's design was that participants were able to remain anonymous when giving their responses. This allowed for a level of comfortability with respondents, who could answer freely about what could be considered a taboo subject within their social, or familial networks. Also, the researcher aimed to design the survey

so that the questions asked regarding CAM usage were neutral in tone, so that respondents would not associate either negative or positive impressions with their decisions to utilize CAM for coronavirus illness prevention or treatment.

The study only had 100 participants that completed the survey, and not all participants completely answered the survey, therefore impacting the sample size of the target population. Therefore, an added strength of the study was the sample size. A power calculation was completed in the planning phase of the study, which yielded a range of participants needed between 30 and 354.

However, this is a sufficient sample size for analysis. Actual participants that completed the survey totaled 100, successfully falling withing the projected range. Additionally, the age range of survey participants was a strength, considering that mothers who completed the survey ranged from 18-60 years of age, with the mean age being 34.1 years.

Another strength of the survey includes that participants were sourced from groups with very diverse beliefs, backgrounds, lifestyles, and who resided in varying geographic areas, since it was distributed through a social media platform, with potentially unbounded reach. The groups targeted or survey dispersal focused on an array of topics, such as holistic wellness and parenting, breastfeeding support, women enrolled in college, and raising multilingual children.

An additional strength of this study was that the survey was collected within the first year of the pandemic. This allowed for most participants to have had the opportunity to been recently impacted by COVID, either for themselves, or within their family unit in

a period of less than 12 months. Prior research on bias asserts that 20% of significant details of major events are irretrievable after a period of 12 months (Hassan, 2005).

A final major strength of the study was the nature of the statistical testing executed in the analysis phase of the project. Analysis ended with a logistical regression which allows for control of confounders. The researcher was able to control for a handful of variables in order to predict the outcome variables of CAM usage.

Conclusions

Overall, the main finding of the study was that, although mothers did choose to integrate CAM use for prevention and treatment into their lives during the pandemic, the variables with associated significance varied greatly between CAM usage for prevention or treatment. Variables that were significant influencers of CAM usage for prevention versus treatment did not overlap at all. This suggests that different cognitive patterns lead individuals through distinctively divergent sets of criteria for prevention versus treatment of illness.

Overall, two of the three null hypotheses were accepted. Perceived severity did not significantly influence mothers' decisions to adopt strategies of CAM for prevention or treatment of coronavirus illness. However, the study did determine that the construct of perceived susceptibility was significantly influencing of mother's decisions to adopt CAM or coronavirus illness treatment. Furthermore, severity significantly correlated with susceptibility, suggesting something else may be modifying perceived severity to CAM usage. No other literature could be found to corroborate this finding. Older mothers were more likely to adopt CAM usage for coronavirus treatment, therefore accepting the second null hypothesis.

Alternatively, mothers with higher education levels were less likely to engage in CAM usage for coronavirus illness prevention, however knowledge scores did not significantly affect a mother's decision to use camphor coronavirus treatment.

Recommendations

Future research on the relationship between CAM usage, the HBM, and mothers is still necessary, whether the spotlight remains on COVID, or not. While this study only included responses from mothers, future studies should investigate women, men and fathers, to determine specific trends or significant beliefs more prominent across the sexes. Additionally, respondents from more diverse backgrounds should be assessed. CAM usage transcends geographical regions, and can be found in practice, in varying capacities, across the globe. Understanding how different populations integrated CAM into their daily lives, including viewing that integration as a result of the global pandemic, is necessary for research. Future research should also look at how beliefs, knowledge and CAM usage shifted pre- and post- vaccination availability. A better understanding of the factors that drive mothers to adopting CAM usage to treat, or prevent coronavirus infection both before vaccination and after, could assist with developing and improving public health initiatives focused on infection control, health education, vaccination campaigns, and health programs.

How I Have Changed

When I begin the study, I couldn't have imagined feeling so similar to those who I was attempting to study. As a mother, it's impossible to know what the perfect choice is for your family. We are constantly bombarded with bombshells of information, opinion, and best practice. This can create an overwhelming responsibility to provide the most

informed, best available care and practices for your family. Additionally, most American-based mothers that participated in the study have not yet had to experience the threat of illness or severe adversity that mothers in other parts of the world must balance when caring for their families. This was not only a new virus that threatened the health and wellness of our families, but it also exposed many others to new level of uncertainty, and unpredictability of daily living, which was likely never experienced before the pandemic.

Personally, through the latter part of this project, I faced a lot of loss. Although not directly tied to coronavirus, it still greatly impacted the lives of myself, and threatened to hinder the quality of my mother I had always dreamed of being. I watched my father scramble to cure himself of what we found to be advanced age kidney failure and gastric cancer. Within a matter of months, he went from being the powerhouse athlete I grew up viewing as unconquerable, to very frail, physically weak and deteriorating. Within days, we celebrated the promise of what a New Year would bring, and then said our bedside goodbyes in hospice care.

My father was invested in my pursuit of research, and not only attended the Zoom of my proposal but constantly asked for updates every time we talked. Little did I know how much this topic resonated with him. He knew he was very sick this time last year at my thesis proposal and chose to not tell any of us the severity of his condition. Perhaps he didn't comprehend the significance of his condition, either. Between him and I, we spent hundreds of dollars sourcing tinctures, vitamins and minerals, special juices, and anything else he thought would give him a fighting chance to take on what was nearly an incurable disease. I watched how frantic he became in the last few weeks, clinging to the hope that this new combination of herbs and traditional remedies could buy him more time with his

loved ones. Slowly, I began to realize that I could understand why people would rely on anything that promised to at least improve their current health status or quality of life. CAM usage provided hope in seemingly overwhelming and hopeless situations.

This project forced for me to work through the hardest and darkest moments of my life. Having the goal of completing the thesis after experiencing an instance of significant loss, seemed insurmountable. There were many weeks where I didn't manage to produce a single sentence. There were others where mania would take over and I would complete a weeks' worth of work in a day. I knew that working through this low point in life would teach me many things, and truly grow me as a person. As an athlete you become acclimated to pushing through the hard and tough moments. I knew that when I could gather my strength and my focus, and really drive myself forward, that I would reach the finish line even if it took me a lot longer and consisted of a lot more gaps then most people. Continuing to pursue the completion of my thesis reinforced my self-discipline, and my determination.

I also experienced, first-hand the critical value of public health, in which many phases of research, behavior change, and adoption of policy, were greatly accelerated by the global pandemic. I also saw the overarching value of research and to pursue, identify and understand the unknown. I learned that if you work hard enough, you can find the answers that no one else had the chance to decipher yet, and maybe even ignite a passion for it in the process. As Dr. Sorenson framed it, I'm now the expert in this specific pursuit, and it thrills me to know that I've poured my time and energy understanding my study's target demographic, and HBM, as related to CAM treatment and prevention of coronavirus illness, and all other associated factors that contribute to mothers' decisions

on caring for their families. I am honored to have had the opportunity to pursue this study.

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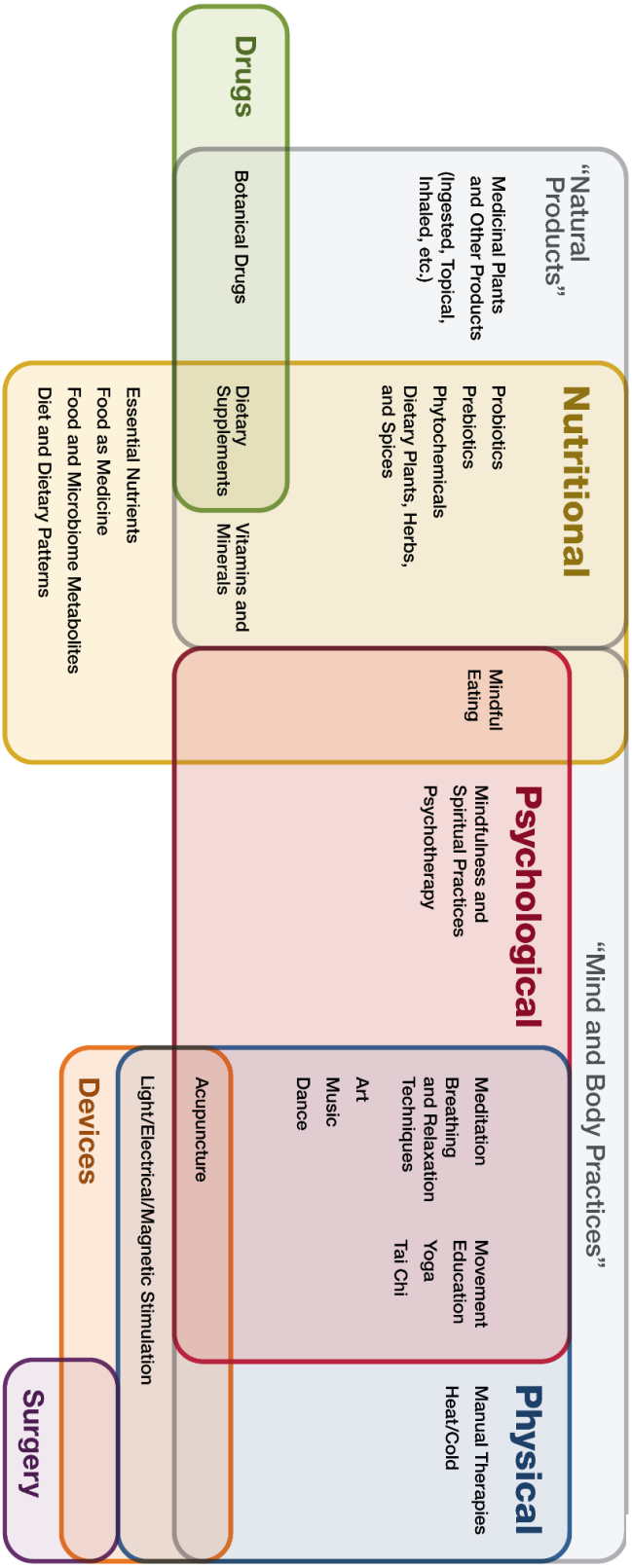
Appendix A: Examples of Complementary Health Approaches



Retrieved from: https://www.nccih.nih.gov/health/complementary-alternative-or-integrative-health-whats-in-a-name

Appendix B: List of Facebook Groups for Survey Dispersion

	Group Name	URL
1	Women in College Support Group	https://www.facebook.com/groups/WomeninCollege/?ref=share
2	Holistic Mama	https://www.facebook.com/groups/1183477291710766/?ref=share
3	Breastfeeding Mama Talk Privately	https://www.facebook.com/groups/bfmtprivately/?ref=share
4	Milky Mamas	https://www.facebook.com/groups/TheOfficialMilkyMommas/?ref=share
5	Raising Bilingual/ Multilingual Children	https://www.facebook.com/groups/RaisingBilingualMultilingualChildren/?ref=share

Appendix C:

Coronavirus Thesis Survey

Start of Block: Consent

Q1 You are being asked to take part in a survey research project entitled "**Exploring Knowledge, Beliefs and Attitudes of Mothers of Young Children and the Use of Complementary and Alternative Medicine Methods for Coronavirus Prevention or Symptom Management**." This study is being led by Gabrielle Frachiseur, a graduate student at The University of Texas at Tyler. This survey is anonymous. No one will know your answers or identity. Please do not type in your name or put any other personal information on the survey. This study seeks to study several topics, including; · the coronavirus pandemic, · coronavirus beliefs, knowledge and attitudes,· complementary and alternative medicine (CAM). There are no expected long-term risks to you resulting from your participation in this study. **Your participation in this survey is voluntary.** You can choose not to take the survey. You may also choose to stop answering questions at any time. You may skip any questions that you do not want to answer. Eligibility: To complete this study, you must:· be at least 18 years of age,· identify as a woman, · given birth to or adopted at least one child, and· have children aged 0-13 years old. If you are eligible to participate in the study, select the "AGREE" button below. By clicking "AGREE", you are voluntarily agreeing to join in this research project. All study related questions should be sent to Gabrielle Frachiseur at ggalvan@uttyler.edu. The survey will take 7-10 minutes to complete. Please answer the questions to the best of your ability. *This study has been exempted from Institutional Review Board (IRB-FY2021-99) review in accordance with Federal rules.*The IRB is a campus committee required by Federal law. *The IRB protects the rights and welfare of research participants. If you have questions about your rights as a research participant, contact the IRB Administrator, at Research@uttyler.edu.

- ○ I agree (1)
- ○ I disagree (2)

Skip To: End of Survey If You are being asked to take part in a survey research project entitled "Exploring Knowledge, Beli... = I disagree

End of Block: Consent

Start of Block: Demographics

Q3 What is your current age, in years?

_____

Q4 What is your highest level of education?

- ○ Less than a high school diploma (1)
- ○ High school degree or equivalent (e.g. GED) (2)
- ○ Some college, no degree (3)
- ○ Associate degree (e.g. AA, AS) (4)
- ○ Bachelor's degree (e.g. BA, BS) (5)
- ○ Any graduate degree (e.g. MA, MS, Med, MD, DDS, PhD) (6)

Q5 What is your average household monthly net ("take home") income, in U.S. dollars?

_____

Q6 Are you currently employed?

- ○ Yes (1)
- ○ No (2)

Q7 Specify your ethnicity.

- ○ White (1)
- ○ Black or African American (2)
- ○ American Indian or Alaska Native (3)
- ○ Asian (4)
- ○ Native Hawaiian or Pacific Islander (5)
- ○ Other (6)

Q8 What is your current marital status?

- ○ Single (1)
- ○ Married (2)
- ○ Divorced (3)
- ○ Widowed (4)

Q38 How many children have you birthed or adopted?

_____

Q34 How would you rate your personal health?

- ○ Very good (1)
- ○ Good (2)
- ○ Neutral (3)
- ○ Poor (4)
- ○ Very poor (5)

End of Block: Demographics

Start of Block: Personal Coronavirus Experience

Q10 Have you experienced symptoms of COVID-19 since February 2020?

- ○ Yes (1)
- ○ Maybe (2)
- ○ No (3)

Display This Question:

If Have you experienced symptoms of COVID-19 since February 2020? = Yes

Q12 What symptom(s)? Please list all.

_____

Display This Question:

If If What symptom(s)? Please list all. Text Response Is Not Empty

Q13 What month and year did you first experience these symptoms?

_____

Page Break

Q14 Were you ever tested for Coronavirus?

- ○ Yes (1)
- ○ No (2)

Display This Question:

If Were you ever tested for Coronavirus? = Yes

Q15 What was the month and year of first, or only, test?

_____

Display This Question:

If If What was the month and year of first, or only, test? Text Response Is Not Empty

Q16 Were your test results positive or negative?

- ○ Positive (1)
- ○ Negative (2)
- ○ Unknown (3)

Page Break

Q17 Where were you treated for coronavirus, the first or only time you became ill?

- ○ At home, self-treated (1)
- ○ At home, no treatment (2)
- ○ Hospital treatment only (3)
- ○ Other (4)

Display This Question:

If Where were you treated for coronavirus, the first or only time you became ill? = Hospital treatment only

Q19 If treated at a hospital or clinic, did you follow the medical discharge treatment instructions to treat your case of Coronavirus?

- ○ Yes (1)
- ○ No (2)

End of Block: Personal Coronavirus Experience

Start of Block: CAM

Q20 Have you ever used any "alternative" products to PREVENT coronavirus infection, for yourself?

- ○ Yes (3)
- ○ No (4)
- ○ Not sure (5)

Display This Question:

If Have you ever used any "alternative" products to PREVENT coronavirus infection, for yourself? = Yes

Q21 If "yes", during the last month, how many times have you done this?

_____

Display This Question:

If If If "yes", during the last month, how many times have you done this? Text Response Is Not Empty

Q40 Select all of the following "alternative products" you have used to PREVENT coronavirus infection.

- ☐ Dietary supplements (1)
- ☐ Vitamins and minerals (2)
- ☐ Herbal medicine (3)
- ☐ Nutrition/ Diet Therapy (4)
- ☐ Colloidal Silver (5)
- ☐ Leech Therapy (6)
- ☐ Non-tobacco smoke (7)
- ☐ Alcohol (8)
- ☐ Other (9)

Display This Question:

If Select all of the following "alternative products" you have used to PREVENT coronavirus infection. = Other

Q41 Please list other "alternative products" you have used:

_____

Page Break

Q22 Have you ever used any "alternative" products to IMPROVE coronavirus infection, for yourself?

- ○ Yes (1)
- ○ No (2)
- ○ Not Sure (3)

Display This Question:

If Have you ever used any "alternative" products to IMPROVE coronavirus infection, for yourself? = Yes

Q23 If "yes", during the last month, how many times have you done this?

_____

Display This Question:

If If If "yes", during the last month, how many times have you done this? Text Response Is Not Empty

Q43 Select all of the following "alternative products" you have used to IMPROVE coronavirus infection.

- ☐ Dietary supplements (1)
- ☐ Vitamins and minerals (2)
- ☐ Herbal medicine (3)
- ☐ Nutrition/ Diet Therapy (4)
- ☐ Colloidal Silver (5)
- ☐ Leech Therapy (6)
- ☐ Non-tobacco smoke (7)
- ☐ Alcohol (8)
- ☐ Other (9)

Display This Question:

If Select all of the following "alternative products" you have used to IMPROVE coronavirus infection. = Other

Q42 Please list other "alternative products" you have used:

_____

End of Block: CAM

Start of Block: Taboo CAM

Q25 Have you ever used alcohol to prevent or alleviate Coronavirus illness?

- ○ Prevent (1)
- ○ Alleviate (2)
- ○ None of the above (3)

Display This Question:

If Have you ever used alcohol to prevent or alleviate Coronavirus illness? = Prevent

And Have you ever used alcohol to prevent or alleviate Coronavirus illness? = Alleviate

Q26 If so, during the last month, how many times have you done this?

_____

Page Break

Q27 Have you ever used marijuana to prevent or alleviate Coronavirus illness?

- ○ Prevent (1)
- ○ Alleviate (2)
- ○ None of the above (3)

Display This Question:

If Have you ever used marijuana to prevent or alleviate Coronavirus illness? = Prevent

And Have you ever used marijuana to prevent or alleviate Coronavirus illness? = Alleviate

Q28 If so, during the last month, how many times have you done this?

_____

End of Block: Taboo CAM

Start of Block: HBM Perc. Susceptibility

Q29

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
It is easy for me to be exposed to Coronavirus. (1)	○	○	○	○	○
Exposure to Coronavirus is a concern in my household. (2)	○	○	○	○	○
I am not likely to be exposed to Coronavirus (3)	○	○	○	○	○
Members of my household get colds and illnesses all the time. (4)	○	○	○	○	○

End of Block: HBM Perc. Susceptibility

Start of Block: HBM Perc. Severity

Q30

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Coronavirus is not a serious health threat. (1)	○	○	○	○	○
The common flu is worse than Coronavirus. (2)	○	○	○	○	○
I could get very sick if I get Coronavirus. (3)	○	○	○	○	○
Coronavirus illness could cause death. (4)	○	○	○	○	○

End of Block: HBM Perc. Severity

Start of Block: HBM Perc. Benefits

Q31

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Practicing preventative measures keeps my whole family safe. (1)	○	○	○	○	○
My family (and friends) would be proud of me for practicing as many preventive measures as possible. (2)	○	○	○	○	○
Vaccination against Coronavirus is a bad idea. (3)	○	○	○	○	○
Vaccination decreases my chance of Coronavirus illness. (4)	○	○	○	○	○

End of Block: HBM Perc. Benefits

Start of Block: HBM Perc. Barriers

Q32

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
It is hard to social distance. (1)	○	○	○	○	○
It is difficult to wear a mask. (2)	○	○	○	○	○
Washing my hands more often will keep me from getting Coronavirus. (3)	○	○	○	○	○
My friends (and family) would not accept me for practicing strict preventative measures (4)	○	○	○	○	○
I am concerned about the safety of the coronavirus vaccine. (5)	○	○	○	○	○
I am concerned about the cost of the coronavirus vaccine. (6)	○	○	○	○	○

End of Block: HBM Perc. Barriers

Start of Block: HBM Self-efficacy

Q33

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I know how to practice good prevention from Coronavirus. (1)	○	○	○	○	○

End of Block: HBM Self-efficacy

Start of Block: Coronavirus Knowledge

Q35

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
Coronavirus originated from a Chinese scientist. (1)	○	○	○	○	○
Coronavirus infection is spread by mosquitos. (2)	○	○	○	○	○
Symptoms of coronavirus illness are headaches, fever, cough, or sore throat. (3)	○	○	○	○	○
Coronavirus leads to diabetes. (4)	○	○	○	○	○
Covering your mouth and nose can help prevent coronavirus transmission (spread). (5)	○	○	○	○	○
Coronavirus infection can develop into COVID-19. (6)	○	○	○	○	○

End of Block: Coronavirus Knowledge

Start of Block: Coronavirus Attitudes and Beliefs

Q36

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I don’t care about Coronavirus. (1)	○	○	○	○	○
I practice many daily preventative measures (2)	○	○	○	○	○
Current United States medical treatment for Coronavirus illness is effective. (3)	○	○	○	○	○
My diet prevents Coronavirus infection. (4)	○	○	○	○	○
Wearing a mask protects me from Coronavirus infection. (5)	○	○	○	○	○
Social distancing does not protect me from Coronavirus. (6)	○	○	○	○	○
Surface sanitizers protect me from Coronavirus. (7)	○	○	○	○	○

Taking vitamins and supplements protects me from Coronavirus. (8)	○	○	○	○	○
Prayer protects me from Coronavirus. (9)	○	○	○	○	○
People who do not wear masks should be put in jail. (10)	○	○	○	○	○
Washing my hands frequently protects me from Coronavirus (11)	○	○	○	○	○

End of Block: Coronavirus Attitudes and Beliefs

Start of Block: End

Q37
The survey is complete!
We appreciate your time.
Please copy the survey link listed below, and send it to a friend for completion.

www.**********.qualtrics.com

For the most up to date Coronavirus recommendations, data, mitigation efforts, and research, visit the Centers for Disease Control and Prevention at https://www.cdc.gov/coronavirus/2019-ncov/index.html
Thank you!

End of Block: End

Appendix D:

Feb 16, 2021 8:09:54 AM CST

Dear William Sorensen,

Your request to conduct the study: EXPLORING CORONAVIRUS KNOWLEDGE, ATTITUDES AND BELIEFS OF MOTHERS AND THE USE OF COMPLIMENTARY AND ALTERNATIVE MEDICINE METHODS OF INFECTION PREVENTION AND SYMPTOM MANAGEMENT , IRB-FY2021-99 has been approved by The University of Texas at Tyler Institutional Review Board as a study exempt from further IRB review subject to Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording). The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects.
. While this approval includes a waiver of signed, written informed consent, please ensure prospective informed consent is provided, if applicable, unless special circumstances are indicated in the approval email. In addition, please ensure that any research assistants are knowledgeable about research ethics and confidentiality, and any co-investigators have completed human protection training within the past three years, and have forwarded their certificates to the Office of Research and Scholarship (research@uttyler.edu).

Please review the UT Tyler IRB Principal Investigator Responsibilities, and acknowledge your understanding of these responsibilities and the following through return of this email to the IRB Chair within one week after receipt of this approval letter:

- Prompt reporting to the UT Tyler IRB of any proposed changes to this research activity.
- **Prompt reporting to the UT Tyler IRB and academic department administration will be done of any unanticipated problems involving risks to subjects or others.**
- Suspension or termination of approval may be done if there is evidence of any serious or continuing noncompliance with Federal Regulations or any aberrations in original proposal.
- Any change in proposal procedures must be promptly reported to the IRB prior to implementing any changes except when necessary to eliminate apparent immediate hazards to the subject.
- Submit Progress Report when study is concluded.

Best of luck in your research and do not hesitate to contact the Office of Research and Scholarship if you need any further assistance.

Sincerely,
University of Texas at Tyler Institutional Review Board