“Different COVID-19 Vaccine Efficacies on Health Care Professionals of a Local Hospital”

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This research paper entitled "Different COVID-19 Vaccine Efficacies on Health Care Professionals of a Local Hospital" presented to you by Group 9 of Grade 12 STEM-B to the faculty of St. Theresa's College, Quezon City in partial fulfillment of the requirements in Quantitative Research is hereby accepted.

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ABSTRACT

By the end of 2021, government officials hope that 90% of the Philippine population will be vaccinated against COVID 19. As of November 11, 2021, 36.91 million people have gotten the first dose, and another 30.81 million has been fully vaccinated; with the entire Philippine population being 109.6 million people, approximately 61.8% of the population has at least started their vaccination. In an attempt to increase the confidence for vaccination, the research group conducted surveys for unvaccinated individuals ranging from 16 to 65 years of age in order to know their initial stance on getting vaccinated; the second survey contained first-hand data from a local hospital on the efficacy of multiple vaccine brands. After all participants have answered, the research group then compiled the results to put up for comparison through Mann-Whitney U-Tests. The major findings of the research show that the experimental group who was exposed to the vaccine results of the frontliners from the hospital had a lower (mean rank) confidence level in vaccines than the control group. This means that the experimental group doubts certain vaccine brands and their efficacy since the raw data must have been completely different from their initial knowledge on the vaccines and their efficacy. For many people, information is a crucial component, and a lack of it can cause them to reconsider their thoughts about vaccination.

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CHAPTER ONE:
INTRODUCTION

Background of the Study

"Awareness is the greatest agent for change." (Tolle, 2020). According to NCBI, the first SARS-CoV-2 case detected in the Philippines started on January 22, 2020, which led to Enhanced Community Quarantine to contain the said virus. More than a year has passed and there has already been a total report of 1,627,816 confirmed cases and 28,427 deaths. On a 7-day average, there are 8,625 cases added as of August 7, 2021. It is without a doubt that these numbers have become alarming, forcing the country to implement numerous lockdowns. As the cases go beyond 200 million all over the world, the economy and holistic growth of the Philippines would be affected which is why concrete action must be made by the government and citizens of the country. Apart from being knowledgeable that hoarding of Personal Protective Equipment (PPEs) and masks will not be helpful, the citizens must also be aware of the vaccines that would be injected into them.

SARS-CoV-2 or COVID-19 is a virus that is part of the coronavirus family that causes respiratory illness and complications to any human host. This was first identified in the province of Wuhan, China last December 2019. As of January 30, 2020, the World Health Organization declared the COVID-19 outbreak as a global health emergency. Due to its uncontrollable effects that have reached countries as of March 2020 all over the world, it was eventually declared as a "global pandemic". In the past years, some pandemic has already occurred such as plagues, yellow fever, influenza, and polio which caused thousands of deaths but even stronger pandemic existed such as the AVIAN FLU (aka ASIAN flu) that took 1.1 million lives worldwide that originated from China. Next is AIDS that started in 1981 and occurs until today. HIV is the virus that causes these and more than 35 million lives have been lost. In January of 2009, a global pandemic called H1N1 Swine flu had also infected approximately 1.4 billion people and caused the deaths of more than 500 thousand. Next are Ebola and Zika. The existence of these viruses just proves that there are possibilities that other viruses will occur and recently, Covid-19 was one of these. Further research needs to be done so that more treatment will be formed.

The continuous outbreak of this virus has imposed unexpected, grueling threats on many aspects of people's lives. This is far more than a mere health crisis as it affects societies and economies alike as well. First and foremost, COVID-19 has had an immense impact on global economic growth. From the report of the World Bank, it was estimated that the global economy would drastically go down by five to eight percent which causes a hundred million people to be part of the poverty line. This ultimately stems from the fact that unemployment rates have rapidly increased throughout the year. In the country, 7.3

million Filipinos were left jobless due to the pandemic as a result of the implementation of different health protocols and social distancing measures in order to minimize the further spread of the virus. The pandemic has forced businesses to close down, workers to be cut off, opportunities to be lost, and so much more.

A ratio of 14.8 nurses to 10,000 patients in CAR (Cordillera Administrative Region) continually works despite the dangers brought about by the pandemic (Statista, 2020). However, as of the first half of August 2020, sixty medical frontliners have sought a time-out to the national government to bring back a stricter enhanced community quarantine due to the national capital reaching the "critical level". Due to the endless number of patients coming in on hospitals seeking emergency care and admission, the healthcare system has become overwhelmed making healthcare workers experience depression and fatigue. Apart from the lack of personal protective equipment, these medical workers are underpaid and given no honor from the patients and the government. According to the Department of Health's (DOH), more than six thousand Filipino frontliners were affected by the virus last August 28. Thus, the DOH prioritized healthcare workers in their project of COVID-19 immunization for they are "highly exposed and can easily contract the disease". In this research, the medical frontliners will be part of this study in terms of assessing and examining the effects of vaccines on their bodies especially on their white blood count, antibodies, and antigens such as Immunoglobulin G (IgG) and Immunoglobulin M (IgM).

According to GMA news, the virus has mutated in the Philippines. This may be due to a factor that is still not known. Mutation can strengthen the virus thus can easily spread and replicate factors but this does not mean that the mutated virus is deadlier. Mutations occur in the virus when the infected host cell produces multiple copies of the viral genome in the process called "Synthesis". Genetic Mutation is characterized by a change in the sequence of the DNA. In understanding how the virus mutated, the SARS-CoV-2 is mutating slowly but that slow mutation makes it more dangerous and could lead to more fatality. During the early pandemic, there was one letter among the 30,000 letters found in the genome of the virus in which it changed from letter A to G. That one letter located at 23,403 in the sequence changed the virus's characteristics a lot. (Kupferschmidt, 2020). This has drawn a lot of attention to researchers and scientists because the spike of the virus was modified in which it is the one that attaches to the human host cells. The mutation modified the amino acid of the virus at position 614 in which the spike became glycine (G) from aspartic acid (D). Now it is called G614. The United Kingdom's COVID-19 Genomics Consortium sequenced the genome of the virus and they compared the lineages of the spread of the virus when the spike protein was D614 until it has become G614. The speed of contamination was 1.22 times faster than before, though it was of little significance during statistical tests. Although there is a weak difference, the virus with the G614 protein enters the cells more efficiently because the shape of the spike

has changed thus, the virus is up to 3 to 10 times more contagious and infectious (Luban, 2020). Thus, the virus has become more transmissible.

Due to the constant mutation of COVID-19 and the emergence of its different variants in the Philippines, numerous Filipinos are now being encouraged to visit vaccination sites in order to take vaccine shots that would help prevent further complications once in contact with the COVID-19 virus. However, with the different vaccines that are present as of the moment, some Filipinos are having hesitancy on which brand to take. Some even find the vaccines untrustworthy due to the side effects that it gives once it is taken in the body. That is why for this research paper, the researchers decided to conduct a study on the efficacy of the vaccines Oxford AstraZeneca, Sinovac Coronavac, and Pfizer BioNTech based on the results collected from a local hospital. Instead of having certain age groups, the research will focus on the efficacy of vaccines in the Medical Frontliners only. With this, participants of the research who are still unvaccinated will be given surveys to test whether information about the results would cause an effect on their hesitancy in taking the vaccine and on which one to take.

Significance of the Study

As the pandemic persists, confirmed cases continue to increase daily, and the vast majority of the Filipino population is yet to receive their first doses of vaccines against COVID-19 for various probable reasons. 10.86 million first doses have been given and 5.5 million Filipinos had their second dose on August 27, 2021, which is less than 10% of the Philippine's entire population according to the PNA (Philippine National Authority.). According to a survey conducted by Pulse Asia on July 12, 2021, thirty-six percent of the respondents are not inclined to get vaccinated any time soon due to their concerns about its safety and effectiveness. Even with the local governments trying to ensure enough vaccines can be given to all, some are still against getting the first dose due to apprehensions. The skepticism felt towards the COVID-19 vaccines somehow suggests that it could take a while for the country to go back to normal without the need for community lockdowns, strict social distancing, quarantining, and the like.

Many sectors of the society would be able to benefit from this study, and this would include the following: the general public, the health sector, the government, and the academe.

Through the study, this would help the general public as this would help fellow Filipinos understand how these vaccines work and react against COVID-19. This would persuade and motivate Filipnos to get vaccinated as soon as possible and lessen their hesitancy through other related studies about the vaccines that would be further discussed in this study. Hence, problems of "Anti-Vaxxers" would be tackled as well through giving them enough information with this study. Consequently, herd

immunity will become more attainable in which the general population becomes immune to infectious diseases which gives indirect protection and immunity for the community, especially to those who are not yet immune to the disease. Moreover, being informed that the Philippines' goal is to have at least 70% of citizens vaccinated, it would be impossible for the reason that it remains a right for Filipinos to consent to getting vaccinated. Choosing not to get vaccinated is their choice and must be respected, however, this does not stop the health sector from convincing them.

Furthermore, it would also be beneficial with the health sector, specifically hospitals, health researchers/scientists, and health workers in a way that they are also informed about the effects of the vaccines and what are the requirements, restrictions, and possibly side effect that should be followed and known whenever they would administer and distribute vaccines to the general public.

Moreover, the government and its constituents themselves would also benefit from this for the reason that this would support Article II Section 5 of our Philippine Constitution which states that “The maintenance of peace and order, the protection of life, liberty, and property, and promotion of the general welfare are essential for the enjoyment by all the people of the blessings of democracy.” This study could educate and reaffirm the people and the government about the vaccine efficacy to help them in choosing to be vaccinated. Thus this would give them an idea which vaccines should be distributed next time which would help lessen cases throughout the country since the vaccines given are effective even through the variants discovered recently.

Lastly, in terms of the Academe, having the fact that it is reported that there was a decrease in enrollment rates in the Philippines. In terms of the enrollment last school year (2020-2021), for private schools, enrollments have dropped to 2,080,233 (-48%). On the other hand, as for public schools nationwide, it has dropped to 584,432 less students that have enrolled (-10%). The study would help in bringing face-to-face classes back due to most students considering getting vaccinated and being vaccinated through the help of the information and data gathered through this study.

Statement of the Problem

The efficacy of COVID 19 Vaccines in reducing the incidence and mortality of COVID infection during this pandemic will be discussed and observed by this research problem. Under that priority is the presumption that the results of this research will dictate if the type of vaccine may vary in it’s length of efficacy in preventing or lowering COVID mortality, or if other factors like age, comorbidities, and duration from last inoculation may affect outcome of COVID infection. Lastly, with the given data about these efficacy rates, the confidence level of unvaccinated people will be tested to see to what extent their

confidence level increased or decreased, and to see the factors that have affected their understanding of the vaccines.

To successfully retrieve the most accurate information, hrands will be put into consideration as well as possible ailments. All vaccines have live antigens that will stimulate the immune system to respond to given antigen, how it is implemented may vary, whether it be a smaller part of a virus or a weakened whole. Along with the antigens are stabilizers; they can either be in the form of amino acids (glycine), sugar, gelatin, or protein. They prevent the occurrence of a chemical reaction and sticking of the components to the vial or injection. The vaccines also have surfactants and some adjuvants which contribute in keeping the vaccine from separating and strengthening immune response once in the body. As for the data-assessment, real-time reverse-transcription polymerase chain reaction (rRT-PCR) will also be utilized.

In the three COVID Vaccines (Astrazeneca, Pfizer, Sinovac), all vaccines have sucrose (sugar) and acidity regulators (Histidine, sodium and potassium salt), but all differ in how the antigens are produced. As stated by the Vaccine Knowledge Project of the University of Oxford, the antigen in Pfizer consists of a genetic code of the COVID protein in a lipid capsule, while the antigen in Oxford AstraZeneca consists of a weakened ineffective adenovirus (flu in chimpanzees) that will deliver a genetic code of the COVID protein into the body. On the other hand, the antigen in Sinovac uses BNT162b2 RNA, a synthetic messenger providing information about the genetic formula for the immune system to replicate a harmless piece of the COVID virus. Unlike the other two vaccines, Sinovac merely gives the code formula and not the genetic code itself, though the Sinovac vaccine is the first vaccine to successfully use mRNA technology.

The information about the vaccines may help decrease hesitancy among Filipinos in order for them to be moved to getting vaccinated as a preventive measure for COVID-19. The research study would be able to assess the different factors that can contribute to this, such as societal factors, cultural factors, political factors and the like in order to see what to improve in the campaign for vaccination. In return, this will be beneficial for medical frontliners in order to decrease hospital capacities, and in the long run, will contribute to finally flattening the curve of infection rates in the Philippines.

Research Questions

As a guide, this research aims to answer the following research questions:

1. How efficient are the vaccines based on the presented data and results?

a. What were the common symptoms observed by the local hospital workers when patients were given doses of these vaccines?

a. Given the effects of the vaccines, are there underlying symptoms that are still present in the vaccinated interviewees?

2. How confident were the unvaccinated respondents in receiving the doses of the COVID-19 vaccines before seeing the data gathered?

    a. What were the different factors that contributed to the unvaccinated respondents' understanding of the health information about vaccination before presenting the data to them?

3. Will the obtained results increase the confidence of the unvaccinated respondents in getting vaccinated?

Variables

The dependent variables of the research include the post-vaccine results in which the White Blood Cell count, COVID-19 antibodies and antigens, as well as the symptoms experienced by the patients will be analyzed. The independent variables on the other hand include the vaccine brands which are Astrazeneca, Sinovac, and Pfizer. As for the controlled variables, the research participants will be Frontliners with a certain age bracket of twenty to fifty years of age only. Further details are found in the theoretical framework.

Scope and Delimitations

With the intent of assessing vaccine efficacy and reducing vaccine hesitancy, the study is mainly concerned with and limited to the three variations of COVID-19 vaccines, namely Sinovac, Astrazeneca, and Pfizer as these are some of the main vaccines being distributed in the Philippines as well as in the concerned local hospital in which the researchers are interested in. The study would only cover that of health workers that have been fully-vaccinated from March 2021 onwards. In the process of data collection, there may also be other factors that must be taken into account as human immune systems vary as a result of heritable and non-heritable influences. Likewise, it would be important to declare whether or not the participant is already of age, immuno-compromised, has a history of any illness relative to COVID-19 and the like which could ultimately affect the results of the study. The researchers are also not completely fixated on the effects of the said vaccines to the recently discovered COVID-19 variants,

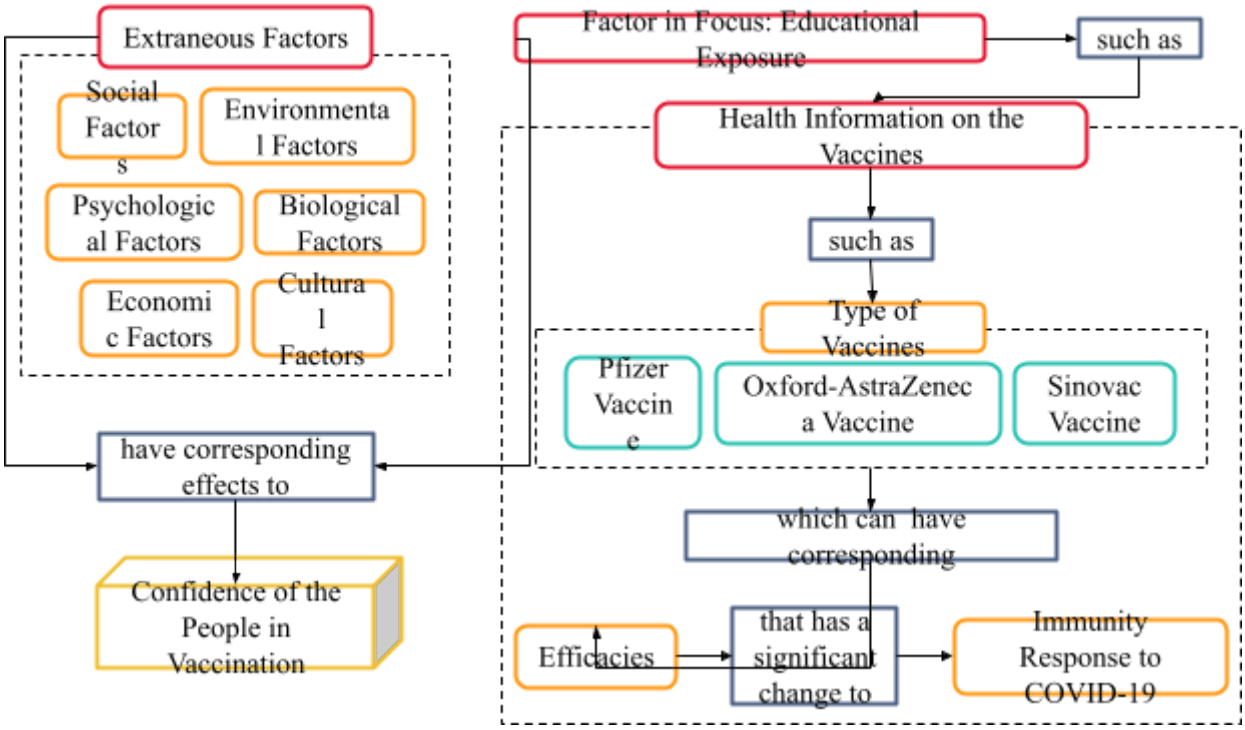
namely the Alpha, Beta, Gamma, Delta, and Lambda variants as there has not been sufficient research on how well these work against the newly established variants.

Conceptual Framework

The focus of this study is more on comparing efficacy rates of the research, and using these comparisons in order to see how this information can help in increasing and decreasing confidence levels in the people. Many factors can affect health decisions of a person, especially when it comes to vaccination. One very important factor that will be explored in the research is the educational factor since this encompasses the health information relating to vaccination. Through the acquisition of the results of the vaccinated professionals, this can help give hard facts to the participants which may contribute to the decision-making of the people on whether or not they should get vaccinated.

Below is the conceptual framework of the research.

IMAGE 1: CONCEPTUAL FRAMEWORK



Theoretical Framework

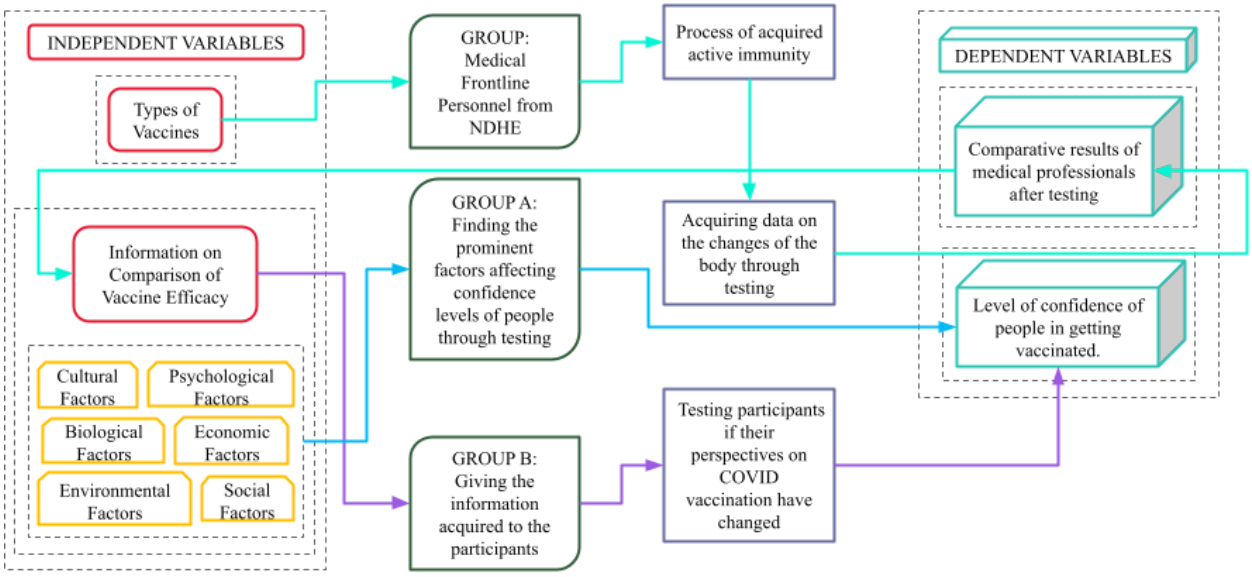
For the research, the group will be conducting two types of research methods: using a one-shot test design for data collection for the vaccine efficacies of medical professionals from a certain hospital, and a pretest-post test research test design to test the confidence level of students in getting vaccinated.

The first test would mainly concern getting the different efficacy rates of the vaccines of medical professionals in a certain hospital. As shown in the framework below, the independent variables are the types of vaccines injected, while the dependent variables are the test results which provide information about the significant changes in the body.

The second part of the research concerns measuring the confidence levels of the students in order to determine whether or not factual information can help increase the confidence levels of the people. In this case, the information gathered from the first test will be considered as an independent variable. The degree of confidence of the participants in getting vaccinated will be considered as dependent variables. Other extraneous variables added are the different factors or determinants that can affect a person's health. According to the article entitled "Identification of Health Risk Factors and Their Parameters" by Dovjak and Kukec, these factors are biological, environmental, work, psychological, social and cultural.

Below is the theoretical framework of the research.

IMAGE 2: THEORETICAL FRAMEWORK



Hypotheses

A. Significance of the Efficiency of the Vaccine

H_0:The post-results of the vaccinated frontliners in the local hospital did not show that there is a significant efficacy on their immunity against COVID-19.

H_A: The post-results of the vaccinated frontliners in the local hospital show that there is a significant efficacy on their immunity against COVID-19.

B. Survey Results on the Confidence of Target Population on Getting Vaccinated

H_0: The confidence level of the people after reading the acquired data will not have any significant changes to it.

H_A: The confidence level of the people after reading the acquired data will significantly increase or decrease.

CHAPTER TWO:
REVIEW of RELATED LITERATURE

This chapter will present foreign and local literature that will be referenced and sourced for the research. This includes similar cases, studies on COVID-19 and the different vaccines, as well as the current status of the Philippine healthcare system and healthcare workers. The related literature mentioned and referenced in this chapter will revolve around the thesis statement and any information that needs to be further addressed. Moreover, research topics similar to the thesis statement were conducted and will be used as a guide and reference for this research. Information on the multiple vaccine brands will also be further discussed with the articles that will be presented below as well as cases regarding vaccine hesitancy. All sources have been checked and validated to make sure to avoid any false information that might prove detrimental to the research.

Foreign Related Literature

Oduwole et.al (2021) conducted a similar study at a university in Capetown, Africa, to estimate the level of confidence and intention to receive COVID-19 vaccines among the HCWs. Their research has been approved by Stellenbosch University. Stated on their procedure was the online source for the survey (REDCAP survey software), as well as a list of methods to calculate and compile results. The survey had 6 questions for demographic and other 6 for vaccine confidence; 12 questions overall (Oduwole, p. 7). All answers were then to be compiled using different models. They used the multinomial logistics regression model to identify which factors directly affected vaccine confidence, and all results will be calculated under excel. Oduwole et.al's research can be a basis for how this research will calculate responses for the survey, and it's limitations. Because an online survey will be used, there is an uncertainty that all respondents will answer. Oduwole et.al has tried to negate this possibility by lessening the questions in the survey. This should prove to help the participants in finishing the survey. The foreign study did not provide the results of their research and only had the references and procedures, so it will not be completely reliable in it's procedure until results have been made publicly available.

Different variants and its origin

Last September 2020, a variant now known as alpha was detected in southeastern England and later on made up for about 60% of new COVID-19 cases by December in the UK. As many other variants began to emerge, a more infectious variant known as beta began to emerge in South Africa. The beta variant is said to have an increased ability to re-infect people who have already recovered from the earlier versions of the coronavirus, and can also show a hint of resistance to some of the coronavirus vaccines

that are still in development. According to a book entitled “Origin and Evolution of Viruses”, genetic variability of viruses is a big threat to vaccine efficacies as there have already been other mutated viruses that have become resistant to antiviral agents or host immune responses such as HIV and influenza. But fortunately as of the moment, there are already studies which have proven that the current vaccines are shown to provide significant protection against the severe diseases caused by coronavirus variants. The most current variant that concerns the world now, however, is called the delta variant which is considered as a “variant of concern” by the Centers for Disease Control and Prevention (CDC) because of its capability to be more easily transmitted from one person to another. So far, this variant was regarded to be the most contagious form of the SARS-CoV-2 coronavirus as of July 2021, forcing the world to once again enforce community quarantines in certain areas. According to the Centers for Disease Control and Prevention (CDC), delta is rapidly becoming the dominant variant for this year in the United States and that being fully vaccinated all three of the F.D.A.-authorized COVID-19 vaccines can serve as protection against this variant. However, it is still likely that even after being vaccinated, breakthrough infections could still occur.

According to the book entitled, “General Biology”, Viruses contain the elements that make-up living organisms such as DNA, RNA, and nucleic acids. Thus, they lack the ability to be independent when it comes to reading or acting upon the information contained in their nucleic acids. They require a host cell to replicate this because it lacks complicated parts (machineries) that cells possess. This machinery in the cell is the one which enables the virus to produce RNA from their own DNA which is a process known as transcription and the building of the proteins was made possible as the instructions in their RNA are encoded. Their virus replication happens in 5 (five) stages: Attachment (virus adheres to a receptor molecule on cell surface), Penetration (the genetic material of the virus enters the cell. In animal cells, the cells engulf the virus and bring it to the cytoplasm via endocytosis), and Synthesis (The infected/host cell produces multiple copies of the viral genome; mutations occur in this stage which serves as a raw material for viral evolution). The information encoded in the protein of the virus will be used to produce the virus’ proteins. The host cells will now provide necessary resources for the virus to be produced such as ATP, tRNA, nucleotides, amino acids, and enzymes. Assembly (protein coat subunits join then the genetic information is packed inside). Release (One the particles of the virus are assembled, they will now leave the cell. Some viruses leave the cell through exocytosis which will cause cell death).

The appearance of this virus is known as spike glycoproteins or peplomers which is responsible for the entering of the virus to host cells. Its spike has two subunits which are S1 and S2. S1 is the one which binds to one of the receptors on the cell surface while S2 fuses with the membrane of the cell. In SARS-CoV-2, the cell membrane receptor is angiotensin converting enzyme (ACE-2). Normally this

membrane's role is to regulate blood pressure but when coronavirus attaches, it induces chemical changes that allows fusion between membranes of the cell and virus so the virus's RNA will now enter. The S1 subunit binds to ACE-2 enzymes found at the surface of cell membranes. TMPRSS2 a host transmembrane serine protease will activate the spike and will cleave the cell membrane receptor. As it also acts on the S2 spike, COVID-19 will now fuse with the cell membrane in which the virus enters the cell and will be released by acidification or action of cathepsin (intracellular cysteine protease) coming from the endosomes (Aronson, 2020). The virus will now hijack the protein making machinery of the cell as it will translate its RNA to copies of new viruses. After several hours, that single cell will produce 10,000 virions that will infect other healthy cells (Patel 2020). Some RNA of the virus dictates proteins to stay in the host cell, some are prevented to signal the immune system as it attacks, and some cells are to create new virions (through cell division) lastly, some help the virus to survive and resist immunity of the host cell.

Availability and Efficacy of the vaccines

Last February 28, 2021, the Philippines finally received its first set of COVID-19 vaccines containing 37,275,800 doses. A year later, the country opened up its vaccination program. A total of 8 vaccines are approved with Emergency Use Authorization (EUA) by the Philippine Food and Drug Administration, and these are the Oxford AstraZeneca, Sinovac Coronavac, Pfizer BioNTech, Gamaleya Sputnik V, Johnson and Johnson's Janssen, Bharat BioTech, Moderna, and Novavax. However, amongst these, only the Oxford AstraZeneca, Sinovac Coronavac, and Pfizer BioNTech show actual evidence in fighting off the COVID-19 virus. On a large phase clinical trial in Brazil, 2 doses of Sinovac that had been administered for a 2-week interval have resulted in a half a hundred percent efficacy against symptomatic patients, a hundred percent full efficiency against severe patients, and a hundred percent efficiency against those who were hospitalized starting 2 weeks after the second dose was received. Combining all the trials from Brazil, Indonesia and Turkey, it was proven that Sinovac had an efficacy rate of 65 to 91% all in all. For Pfizer-BioNTech, it usually requires two doses which are ideally taken 21 days apart in order to take full effect. Patients of sixteen years of age and above on a clinical trial resulted in an efficacy of nineteen over twenty (95%) against SARS-CoV-2 from a patient and one from a non-infected vaccinated person. Whilst according to research from Lance, it is shown that the vaccine had an efficacy of seventeen over twenty (85%) on a single dose. The Public Health England then affirmed that it had eighty-nine percent efficacy on the first dose and ninety-one for the second dose in comparison to the research made by the New England Journal of Medicine as they analyze the Pfizer vaccine efficacy. Based on a study in Qatar, it was found out that Pzifer vaccinated patients are seventy-five percent less likely to contract the virus, specifically the beta variant. Other studies show that people will also be

ninety-percent protected from the alpha variant. In regard to AstraZeneca, two shots of it can be sixty-seven percent effective in defending against Delta variant and seventy-four percent for Alpha variant according to the New England Journal of Medicine. However, this was in contrast to the results of Public Health England which showed that the vaccine had an efficacy of only thirty-percent. Through this, it was mentioned in the research that this would improve the maximisation of the vaccines especially for the vulnerable communities against Dela variant circulation.

Vaccines

The "Vaccine Information Facts Sheets" given to recipients listed down the possible side effects and benefits of the Pfizer vaccine and was last revised on August 23, 2021. . In addition, the symptoms of COVID-19 were also mentioned (pg.2). Before getting a vaccine, the recipient must list all allergies, disorders, and other medical issues as well as if they have already received a COVID-19 vaccine beforehand, with or without any reactions.The Information sheet also informed it's recipients of the notable allergic reactions following the Pfizer vaccine, such as difficulty breathing, swelling, increased heart rate, rashes, and dizziness. If any of the following mentioned were experienced by the recipient before with any ingredient in a vaccine, then they are to be prohibited from taking the Pfizer vaccine. Alongside allergy cases, no vaccines should be given to people ages 11 and below, and people ages 12 -15 can only receive a vaccine via emergency. In terms of benefits, the vaccine has no known duration/ expiration of effectiveness against COVID-19 as of yet, but is capable of preventing the said virus after 2 doses, 3 weeks apart. Mentioned in the information sheet were also the possible symptoms that can be experienced once taken the vaccine, such as fever, arm pain, and vomiting. There were also a notable number of people who had Myocarditis and pericarditis. If any of the symptoms have occured, it was recommended that the recipient go to seek medical help as soon as possible; links have been given in the information paper as an emergency measure.

This information sheet is relevant to the research for it also informs possible symptoms to the recipients before choosing to get vaccinated. Knowing all the allergic reactions and possible health risks might've proved to be one of the reasons as to why hesitancy against the vaccine is still prevalent in the Philippines.

Vaccine Development

Vaccine development progresses through preclinical evaluation along with three distinct clinical stages according to the journal article "COVID-19: Vaccines to Prevent SARS-CoV-2 Infection". In phase

I trials, vaccine safety is tested wherein immunogenicity is also measured alongside this. Phase II trials further expand the vaccine's safety profile and immune response assessment in larger numbers of participants. Lastly, in Phase III trials, the efficacy in preventing laboratory-confirmed diseases are determined. Vaccine efficacy is calculated with the difference of the attack rate of unvaccinated from vaccinated people, divided by the attack rate of the unvaccinated, and multiplied to 100 to get its percentage. These steps and phases usually take several years to complete. Despite this, the efforts of making COVID-19 vaccines have heightened significantly, occurring over only several months. The vaccine development for SARS-CoV-1 and Middle East respiratory syndrome coronavirus (MERS-CoV) made the rapid development of the COVID-19 vaccines ultimately possible. Nevertheless, proper safety criteria was strictly followed with the assistance of the Food and Drug Administration (FDA). They monitored each progression in human trials and have approved them to ensure the safety of the participants.

The development of the COVID-19 vaccine, despite its rapid nature in terms of its production, has been through thorough testing, research and investigation throughout the three major trials aforementioned. Knowledge of this could be of significant help in reassuring those who are doubtful that the production of COVID-19 vaccines were rushed due to the limited time in which they were made. This could hopefully help those who are hesitant to receive the vaccine in the sense that proper authorities, professionals and experts have been hands on in each step of the development process to ensure that the vaccines would be effective and safe for human administration.

According to the book entitled: "Basic Immunology" by Abul Abbas: antibodies are created by specific cells in the immune system thus, it is considered a protein. Antibodies are often utilized in clinical laboratory testing for research as "highly specific reagents" in identifying various molecules that circulate in the body and the ones found in cells and tissues. This protein is innovated and designed to lessen potential harmful molecules and cells. When it comes to vaccination, active immunity refers to a person being exposed to microbes and antigens in eradicating infection and developing resistance by the microbe. Passive immunity refers to a person receiving cells or antibodies from another person that is already immune from a specific infection. Active immunity can be further divided into two (2) which are Humoral and cell-mediated immunity. Humoral immunity refers to antibodies produced by B lymphocytes cells. All the secreted antibodies will circulate into the body and mucosal fluids that fight microbes by eliminating and neutralizing them in the outside host cell, in the blood, or in the extracellular fluid region. Intracellular microbes are fought by cell-mediated immunity which is also known as T lymphocytes. This cell activates phagocytes that destroy microbes by ingesting them into intracellular vesicles. T-cells only detect protein antigens where B cells and antibodies recognize various molecules.

Immunization stimulates adaptive immune response. Some of the most considerably effective vaccines consist of microbes that are weakened in order to lessen their infectivity and pathogenicity but still maintain their antigenicity properties. It then produces antibodies. These concepts from the book show parallelism to the study through the variables: types of vaccines to be used such as Pfizer, Sinovac, and Astrazeneca. Since Pfizer is composed of COVID-19 mRNA, Sinovac has inactivated virus, and Astrazeneca has Non-replicating viral vector, the claim of the book about vaccines who have weakened virus will be compared to the actual results in methodology as part of theory-testing. This book also explains one of the concepts tackled in the study such as the acquired active immunity which is to be further expounded in the results and discussions with regards to the results in the efficiency of vaccines.

Medical Workers

In the academic journal article: "Legal and Ethical Challenges of the Nursing Profession During The COVID-19 Pandemic" of Lady Gee Campanero, a Registered Nurse, emphasized the importance of Nurses professionals in this global pandemic who have become "battlefield foot soldiers". Although Nurses were given recognition, the society only sees a small picture of the dilemmas that they are dealing with specifically on legal and ethical issues with patients. For the past decades, legal and ethical challenges that the nurses are facing were magnified only by the non-maleficence principle which means avoiding dangers and harm while doing their duties of dedication, loyalty, and beneficence for the patient under the sworn oath. In this research, Campanero (2020), used various sources and correlated studies to further increase knowledge on nurses and of the public to increase comprehension and cognitive understanding of how nursing profession works in this time of the pandemic. The roles of nurses were only magnified during this pandemic and will wear off after the crisis. Thus, as part of the studies' conclusion, COVID-19 effects are said to be long-lasting and will always leave a mark in medical practitioners and nurses' history. Although nurses are taken for granted ever since, this pandemic is an opportunity to revisit the issues and mistreatments that they continually receive. It is then recommended that policies must also look at the concerns of every medical practitioner both at their work and personal issues to increase efficiency in facing medical problems locally and globally. This article is essential and relevant to the group's research for it tackles one of the essential variables of the study which is the Frontliners which are subjected to vaccination. As stated in the Background of the Study, Medical workers are often not given attention to and neglected by the government. However, once the vaccines arrived in the country, they were prioritized as they are considered to be the "frontliners" in facing SARS_CoV-2. Thus, they have to be immunized as soon as possible to increase their protection. The study also focuses on the vaccine's efficiency in providing solutions to vaccine hesitancy and anti-vaxxers

towards herd immunity, the research, in a way, prioritizes and promotes the well-being of medical frontliners who continually work for the country.

Multiple studies show that the prevalence of COVID-19 is higher among people who work outside the home and in the healthcare setting, suggesting that frequent contact with the public, customers, or patients can cause higher risks of infection (Marshall et. al, 2020). On a global scale, thousands of essential workers in various occupations have contracted or have died from COVID-19 with healthcare workers (HCWs) at the center of it all, being the frontliners due to the nature of their work. They are at risk of developing COVID-19 after unprotected exposure during patient and non-patient care activities in the workplace. Substantial data is available to support the fact that appropriate infection control precautions can reduce the risk. This would also include universal masking (Chou et. al, 2020). According to data collected by the World Health Organization (WHO) prior to the availability of COVID-19 vaccines, 14% of reported COVID-19 cases were among HWCs alone. However, the presence of surveillance bias could be taken into account since the HWSs are usually tested at higher rates than that of the general population. As the subjects of interest of the group would be healthcare professionals of a local hospital in the country, it would be notable that the nature of their work entails more extreme measures when it comes to the exposure of COVID-19. This would be an essential factor to consider, most especially since one is still able to contract the virus even if they are fully-vaccinated.

Vaccine Hesitancy

In the article “Addressing Vaccine Hesitancy in Immunization Programs, Clinics and Practices”, reasons underlying vaccine hesitancy are multiple, variable and not necessarily confined to particular groups or communities (Dubé, 2016). This tends to occur in clusters with groups of similar beliefs, backgrounds, socioeconomic statuses and the like. Multiple studies from different countries have shown that beliefs of healthcare providers on immunization strongly influence vaccine acceptance in general. It is said the more confident they are towards vaccine safety and efficacy, the more the people would share in these beliefs of theirs. In the same way, a healthcare provider’s personal immunization status somewho finds reflection in the vaccination records of their patients. Their attitudes and behaviors when working with different people could also influence whether they will come forward with concerns or accept immunization in general. That being said, it is essential for people to receive consistent and accurate information regarding vaccine safety and benefits from trusted healthcare providers wherein it would be conveyed in a positive manner. Knowledge-building around immunization is a recognized factor in increasing vaccination uptake overall.

Confronting vaccine hesitancy through an immunization program requires the involvement of a number of elements and factors in an effort to heed to its negative implications. Proper distribution of information and influence regarding vaccine safety and efficacy would be the key ideas of the article which could be taken into consideration by the researchers as the study is further conducted, specifically in the analysis of the reasons behind vaccine hesitancy. Since the study is mainly concerned with increasing levels of vaccine confidence in the country, it would be beneficial to take note of the different factors that could be of considerable help in doing so in order to reduce skepticism revolving around COVID-19 vaccines.

In the year 2015, the Philippines had shown some of the highest rates of vaccine confidence in the world whereas a multitude of other countries had been faced with numerous anti-vaccination movements in some cases (Larson, 2016). The laudable compliance of Filipinos with childhood vaccinations had drastically changed upon the relevance of the Dengvaxia controversy in the year 2016 due to particular findings published by pharmaceutical company Sanofi Pasteur, the producers of the said anti-dengue vaccine. Initially seronegative patients were said to have faced increased risk of severe dengue, and several reported deaths were a topic of interest in the media as they were allegedly linked to the Dengvaxia vaccine. This had then received widespread media coverage and had been a topic of interest as well on multiple social media platforms which would be the main reason as to why the once relatively positive attitudes Filipinos had towards the administration of vaccines had declined catastrophically. The consequences of the Dengvaxia controversy is said to be unmistakable, and is likely affecting the vaccination prospects of the country in terms of the roll-out of COVID-19 vaccines at present. (Alfonso, 2021).

The Dengvaxia controversy became an issue that contributed to vaccine hesitancy, as there were many negative findings presented, thus the disapproval of anti-dengue vaccination. That being said, it is likely that this particular issue could be seen as both psychological and social factors to consider given that there are people in the country at present who choose not to receive doses of the COVID-19 vaccines due to skepticism and reluctance. This is ultimately relevant to the conducted study as this would be an extraneous factor which contributes to mass vaccine hesitancy in which the researchers aim to eradicate in the least as to promote herd immunity which would play a vital role in bringing the pandemic to an end all in all which would help multiple aspects of the country in various ways.

From a research made by El-Elimat et. al (2021) entitled, “Acceptance and attitudes toward COVID-19 vaccines: A cross-sectional study from Jordan”, they concluded that from the gathered data from the survey that they have conducted, it is said that Jordan has the lowest acceptance rate in terms of

the COVID-19 vaccine. Having the fact that most citizens either refuse getting vaccinated or still undecided, the vaccine was a safety concern; its cost have also influenced the refusal of many. Moreover, one factor that affects the acceptance of the vaccines is the affordability and availability of the vaccines. From recent studies, it is said that the willingness of people to pay for the vaccines was one of the predictors of vaccine acceptance. With this research made by El-Elimat et. al, this would be relevant in this current study for the fact that this would give an idea that it is not only the health risk and past vaccinations like the Dengvaxia incident that affect the hesitancy of Filipinos, but also the affordability and availability of these vaccines in the country as well.

In the book entitled: "Janeway's Immunobiology, 9th edition", it intricately studies how the body defends itself against infections and pathogens. Edward Jenner's successful experiment has led to the idea of vaccination which refers to healthy individuals being inoculated by strains of disease-causing agents which are attenuated in providing protection to the body. When a body responds against infection, it produces antibodies that act against the pathogen which is known to be adaptive immunity wherein the individual adapts to the infestation. Sooner, it was discovered how antibodies could be stimulated through antigens which are "proteins, glycoproteins, and polysaccharides" of pathogens. Antibodies are composed of two unique regions. The constant region is known as the fragment crystallizable region which has one of four or five distinguishable biochemical forms. The next one is the variable region which is composed of various amino acid sequences that gives the antobies the ability to identify certain antigens. Antibody molecules are made-up of two (2) identical heavy and light chains. The heavy and light chain variable region will join in creating an antigen-binding location that detects specificity of antigen-binding in antibodies. Its constant region, on the other hand, defines the effector function of the antibody which means the act of interacting with other immune cells to discard antigen once it binds. Antibodies have three ways of participating in host-defense. The first one is it binds and neutralizes a toxin that prevents its contact with cells that causes pathology. Second, antibodies neutralize the particles of a virus by inactivating and binding with them. Next, is opsonization that coats an antigen then ingests and destroys it. Fc regions of antibodies then bind to the yellowish color Fc receptor. Conclusively, antibodies focus on pathogens and target their toxic product to be disposed of by phagocytes. This book is related to the study which is part of the dependent variable: the comparative results of the vaccines on medical professionals in which one of the important levels to be studied is the antibody for it is the one that protects the body against the virus. Since the book mentions how antibodies work, it would be helpful in proving the importance of vaccines in achieving immunity as it stimulates the immune system. In the contemporary immunology tools and molecular biology, they are utilized in developing new and improved vaccines. This guarantees good health that is essential in controlling population and development of the economy. It

is also essential that anti-vaxxers know how pathogens cannot evolve and develop themselves to vaccines in increasing their confidence level.

From the book “Microbiology and Immunology” by Levinson & Jawetz (1998), the interaction between the antigen and antibodies are highly specific, thus, this characteristic is often used in diagnostic tests in laboratories to identify various microorganisms. As these antigens and antibodies are binded by weak forces like hydrogen bonds and van der Waals’ forces rather than using covalent bonding. Furthermore, the binding strength is tantamount to the antigen’s fit with its antibody-combining site. The link of antibodies increases with exposure to the particular antigen it is contacting.

Factors Affecting Health Decision-Making of People

Different factors are needed to be recognized in how people create health decisions in order to assess and see if these may cause diseases in people (Dovjak & Kukec, 2019). If these are taken into consideration, then these can be further traced down in order for professionals to research on how these factors can be addressed accordingly.

As stated by Dovjak and Kukec in their article entitled “Identification of Health Risk Factors and Their Parameters”, there are six groups of health factors that can affect health decisions of the people. One factor is the biological factors that refer to any part or processes of a human body system which can change depending on the external factors. Another factor is the psychological factors wherein external factors have contributed to the mindset of the people, thus indirectly influencing their actions and behavior. Social factors are factors that relate to a wider audience such as ethnicity or race, gender, etc (Kelly, 2021). Economic factors concern the financial state of the person which also contributes to their decision making. Lastly, environmental factors concern the place and climate where one lives, which can greatly influence their lifestyle choices.

Under psychological factors, the education factors are highlighted here since the medical reports that will be produced in the research will act as a dependent variable. These are the factors concerning the learning of the persons involved which have heavily influenced their actions among others. This was supported by research where findings show significant correlation of education to health, especially its determinants and risks (Feinstein et. al, 2006).

These factors are very important as these can help professionals in creating solutions that will help people create healthier and safer health decisions, most specifically the vaccination processes to prevent the spread of COVID-19. In line with this, the research will attempt if exposing individuals to this gathered information from healthcare professionals will help increase or decrease the confidence level of

students in getting vaccinated. As shown in the research conducted by Bono et. al. entitled “Factors Affecting COVID-19 Vaccine Acceptance: An International Survey among Low- and Middle-Income Countries”, there’s a strong link between the economic and educational factors of a person to their choices in data vaccination. Still, since this is a global research not conducted in the Philippines, the degree of how these factors can affect a person can still change, which is why the researchers will be tackling this issue.

Flynn et.al (2014) has also listed that informing and orienting healthcare staff is under the jurisdiction of the healthcare human resource management. (pg.15, Healthcare Human Resource Management.) They are also in charge of evaluating the competency in performance. The Hr for healthcare workers must orient them about all COVID related important notes, such as the COVID ward, vaccination, and handling of COVID patients. Because they watch over their health and security, it is likely that the information given to the healthcare staff overwhelms them, and in fear, hesitates on getting a vaccine. (page 17) Knowing the importance of the Hr to healthcare workers sheds light into the situation in hospitals, and how they go about working amidst the pandemic. The limitation of this reference is, however, the fact that it was published before the pandemic has started. Specifically, it was published in 2014, where no outbreak has occurred. This gives a lack of advice for this current specific occasion.

CHAPTER THREE:
METHODOLOGY

Research Design

Both parts will be done through a one-shot research design. Not only does this lessen the time, but it also eases the collection of data as it only focuses on the variables needed. This test would be applicable for the research considering that there will only be one treatment made and no pre-tests are needed.

The data for the first phase will be taken from one hospital only, thus making this the condition of which the research team will control. Another condition that will be controlled is the type of vaccines that will be tested, namely, Sinovac, Jansen, Pfizer and Astrazeneca, since these are the only vaccines administered to the participants.

Table 1: One-Shot Research Design Diagram		
Phase 1: Vaccine Test Results		
Control Group	(no control group applicable)	
Experimental Group	X	O1
Phase 2: Acquiring Vaccine Efficacy		
Control Group		O2
Experimental Group	X	O3

The conditions that will be controlled in the second phase is the age and current vaccination status of the participants. Since there is a limitation to the people the research team can interact with, only individuals aged 16 to 65 will be surveyed. The researchers have widened the age group of the participants due to the proclamation of the government of the Philippines to widen the vaccination age group from ages 12 and older (Duterte, as stated in The Strait Times, 2021).

With regards to identifying the relationships between the participant's age and their responses, the group has decided not to use correlational statistics because the ages of the participants are not evenly distributed which could make the results imprecise. However, the group will be utilizing Mann-Whitney Tests for Research Questions 1 and 4 and Descriptive Statistics for Research Questions 2 and 3 to effectively compare the two groups in the experiment which are the experimental and the control group.

Population and Sample

The research team aims to test the confidence level of unvaccinated individuals ages 16 to 65 in getting the covid vaccine. The participants will be given an online survey with two parts, which will be answered before and after they are presented with hospital data on vaccine efficacy derived from patients admitted for COVID in the local setting. With this information, the target population will have some level of knowledge on the efficacies of the COVID vaccines.

The specified age range was selected to include those who are within or below the age limit set by different vaccine brands up to those who are within the upper age limit allowable to receive the vaccine. The age limit of vaccination varies between brands; SINOVAC has an age limit of 18 years old to 59 years old, AstraZeneca also has an age limit of 18 years old with no known maximum age limit, and Pfizer has an age limit of 16 but is now undergoing phase 3 trials to lower the age limit to 12 years old. (In line with the recent Delta variant, another vaccine brand by the name of Janssen has also been released, it has an age limit of 18 years old as well. Women 50 years old and above have a risk with blood clots should they take this vaccine.) The target population is everyone within the legal age to get vaccinated. This is for the reason of their opinion in the matter being most important. The general locale where majority of the survey will come from is in NCR, and their target number of vaccinated people is to have 85% of their population vaccinated by the end of october. In line with their goal, the research team hopes to see if this feat is plausible, and if not, aims to convince those who aren't with data directly taken from a local hospital. Since the research design comprises only a one-shot design, and with other limiting factors such as time constraints, both data will be cross-sectional or a one-time collection. This will help decrease the maturation effect of the participants, especially the participants of phase 1 wherein the effect of vaccines may not be noticeable after a time.

The data gathered for the survey consists of people from the local hospital who have willingly lent their vaccine test results over the past months starting March 2021. They have requested to remain anonymous and will be respected for their decision (Privacy Act).

Research Locale

The study was conducted at the Senior High School Department of St. Theresa's College, Quezon City, a private institution accredited by the Philippine Accrediting Association of Schools, Colleges and Universities (PAASCU) located at 116 D. Tuazon, Santa Mesa Heights, Quezon City, 1114 Metro Manila *(Latitude: 14.627935826316063, Longitude: 121.00084371923712)*.

The sample population would consist of Filipino respondents that have resided in the Philippines, specifically in the greater Metro Manila as well as nearby provinces for a significant period of time. This is to establish social, cultural and environmental similarities between particular factors that may affect one's perception towards the topic at hand.

As mentioned, the study will consist of two main phases with regards to the sample population. The first phase will simply consist of fully-vaccinated medical frontliners working in NDHE that have received any of the three main vaccine brands that the researchers are concerned with. Phase 2, on the other hand, will consist of individuals that are yet to undergo COVID-19 vaccination processes. Given the current situation of the COVID-19 pandemic in the country, it will only be conducted through easily-accessible online platforms to ensure the safety of both the participants and researchers.

Sampling Method

As the pandemic still persists, the research team does not have the assurance that a more precise sampling method would be used for the research due to the lack of availability of respondents and also having the fact that respondents are also focused on their daily tasks such as academics and work, it is best that the researchers would not consume a lot of time from them. Thus, the research team would be using purposive sampling, which means that the team would be sending out surveys to people ages 16 - 65 and are unvaccinated. If ever the people who receive the forms cannot participate in the survey, they are encouraged to pass them on to acquaintances of the same age and are also unvaccinated, in order for the researchers to receive a total sample size of 70. Using purposive sampling would be the best for for this research since having the fact that the younger generations are more exposed to technology and even hoaxes which implies that they are more exposed to what is happening and learn more about sciences like vaccines and its components, which means that they are more knowledgeable about the vaccines and would have a higher chance that they would agree with the vaccination. On the other hand, for the older generation, having the fact that they are more on believing in their own superstitions and beliefs, this would likely show that because of their thinking of beliefs over facts, they would likely disagree with the vaccination. Thus, by having a controlled set-up this would know what are the typical opinions that they would have and know the general reasons that would affect their decision making. Lastly, by having an experimental set-up, being provided with official and authentic data from a local hospital, it is initialized that this would alter their decision in a way that for the younger generations, they could gain more knowledge about the efficacy of these vaccines while for the older generations, it is likely that they would give have second thoughts of whether or not they would get the vaccine.

Instrumentation

The research team utilizes two separate Google forms surveys wherein one is assigned for the controlled group while the other is assigned for the experimental group. Here, all participants of the research shall strictly only be within the age range of 16 - 65 years old. The questions for the survey comprises both branching and ranking. Since the research will utilize a self-perception and opinion survey, the participants will first be asked if they feel confident about getting the vaccine, then if their answers are either positive or negative depending on the rating of the 5 point Likert-Scale in the form of ”strongly agree, agree, neutral, disagree, and strongly disagree”, they will be given a follow-up question as to what they think have affected their decision making. The questions will be made to focus on these different factors, separating them into the social, environmental, psychological, biological, economical, and cultural factors that could affect their decision making, opinions, and confidence in being vaccinated.

The questionnaire for the controlled group (*Appendix item 1.2*) consists of 18 questions focusing on the initial thoughts of respondents on the different COVID-19 vaccines without any knowledge yet of the COVID-19 vaccine efficacy results that were obtained by the research team. On the other hand the questionnaire for the experimental group (*Appendix item 1.3*), also consisting of 18 questions, focuses on the thoughts of respondents after acquiring the obtained COVID-19 vaccine efficacy results (*Appendix item 2)* that will be provided to them by the research team. More details about the questionnaires can be found in the paper's table of specifications.

Formulation

Research Question	Variable and Nature of Data	Questionnaire Item
What were the different factors that contributed to the unvaccinated respondents’ understanding of the health information about vaccination **BEFORE presenting the data to them**?	Initial perception of the vaccination process. Ordinal: Likert	● Q1 to Q3 - Social Factors ● Q4 to Q6- Environmental Factors ● Q7 to Q9- Psychological Factors ● Q10 to Q12- Biological Factors

		• Q13 to Q15- Economical Factors • Q15 to Q18- Cultural Factors **refer to appendix item 1.2*
What were the different factors that contributed to the unvaccinated respondents' understanding of the health information about vaccination **AFTER presenting the data to them**?	The influence of the sample data on willingness to get vaccinated. Ordinal: Likert	• Q1 to Q3 - Social Factors • Q4 to Q6- Environmental Factors • Q7 to Q9- Psychological Factors • Q10 to Q12- Biological Factors • Q13 to Q15- Economical Factors • Q15 to Q18- Cultural Factors **refer to appendix item 1.3*

Validity

The local hospital already has the data that will aid the group in analyzing the efficiency of the vaccine. Pre-planned surveys will be conducted to students and the group will be professional and will employ blinding in conducting it to avoid demand characteristics, experimenter bias, or guinea pig effect that could be the sources of constant errors which are described to be systematically biased. Standardized

questions will be used with regards to vaccine hesitancy thus the survey will not undergo validity and reliability tests anymore. The experiment did not include pre-tests and post-tests to lessen the possibility of a history effect in which the data will not be highly valid because of the subject's memorization ability. Furthermore, all of the data provided by the NDHE hospital are updated and the survey to be given away to the participants will entail their present experiences such as their current views about COVID-19 vaccine to lessen the maturation effect. The questionnaire and the process will not be lengthy as well to avoid significant effects on the internal validity of the research. The survey is also standardized which uses likert scale which means it is not self-made.

The instrument utilized by the group is valid as it is checked by a Professional Science and Research Professor in St. Theresa's College, Quezon City. The group also underwent lessons on which type of statistical test as well as data collection methods should be used in the experiment based on its appropriateness and relevance. Furthermore, the group relied upon the review of related literature in discerning the instrument to be utilized.

The independent variables of phase 1 consists of the three vaccines, while the dependent variables will be the body's immune response through the antigens and other components that are affected as the immune system responds to the vaccines. The results will be calculated later on in order to get the overall efficacy of each of the vaccines. Phase 2, on the other hand, consists of the results of phase 1 as the independent variable, alongside the extraneous variables that will be discussed later on. The dependent variable, meanwhile, is the confidence level of the participants. This will be calculated through the Likert Scale which will be discussed later on.

There are extraneous variables for both phases of the research. The first phase, which comprises the data collection of the vaccine efficacies in healthcare workers, have three extraneous variables, which are the number of vaccines given, the time of effect after being vaccinated, and their exposure to work. These cannot be controlled by the researchers since the hospital cannot control the number of vaccines given to them. To add, the vaccine supply varies depending on the date given, which is why some workers may have taken the vaccine earlier than others. Lastly, with the ongoing changes with regulations, the number of confined patients to COVID-19 may also vary, thus continually changing the exposure of these workers to COVID-19.

The second phase has 6 extraneous variables, and as shown in the previous frameworks, these are the social factors, biological factors, psychological factors, environmental factors, cultural factors, and the economical factors of the participants. Although these will be quantified later on for the survey administration, these cannot be controlled by the researchers as the participants have come from different

backgrounds, are exposed to different factors, and have their own opinions. Nonetheless, there may still be general views on a certain topic, which will then be measured by the research team in order to see which factors have been affecting the vaccine confidence level the most.

The group has agreed upon equally distributing the participants in the given age bracket to make reliable and valid results. Furthermore, the data came from the NDHE hospital from their vaccinated frontliners. The concept behind this is to lessen the risks of having largely variated results which have to be included in the scope and delimitations. The group has a wide age bracket to see if there will be differences in the views of the different generations about the vaccines. Some factors or variables must undergo constancy of conditions in order to properly address these in affecting the research. Without proper solution to the extraneous variables, the research will have to recommend it to future researchers in Chapter 5.

Reliability

In terms of demand characteristics, the group ensured that the objectives of the survey were not disclosed but rather, the researchers used general ideas or hints. In letting the participant know about the research, this was the official statement of the group: “Good day! I'm [name] of 12 STEM B of St. Theresa's College, part of the group conducting a research entitled “Covid-19 Vaccine Efficacies of a Local Hospital and its Correlation to Vaccine Confidence”, wherein we aim to assess the efficacy of medical information when delivered to the masses. In line with this, we are humbly asking for your participation and consent to use data in this research wherein data collection will be done through the use of Google Forms. We assure you that your data will be protected as mandated by the Data Privacy Act of 2021. Thank you for your participation!” In addition, the group employed blinding in which the subject was not informed about being part of the experiment or the control group. The survey provided to them only contains the data privacy form which they would sign to whether they agree or disagree in providing their data and the survey questions which focuses on their vaccine hesitancy. As for the control group, the survey did not include the vaccine efficiency of Pfizer, Sinovac, and Astrazeneca. In contrast, the experimental group’s survey included the vaccines’ efficiencies. Through statistics, the group will determine whether there would be a significant change in the experimental groups’ view on vaccines after seeing the vaccine efficiencies.

The group has also employed professionalism in approaching the respondents to avoid experimenter bias in which the target participant will give untruthful modifications or will deviate from his or her true answer or response. Professionalism also lessens the risks of Guinea pig effect which affects the quality of participants' response in the given survey due to personal view about the researcher.

Most importantly, the researchers will only analyze results from the gathered data which means the research is removed from the objectives of the researchers to avoid untruthful and unreliable data due to modifications as a result of personal agenda.

Data Collection Techniques

Appendix item 3 shows the consent letter presented by the researchers to the respondents before their participation in the study. The collection of data goes in accordance with the Data Privacy Act, wherein the research team will look for participants who are strictly within the age range of 16 - 65 years old, making sure to provide them with a formal consent letter that all the data obtained will be classified. The participants will then be grouped into two groups such as the controlled or experimental group, and afterwards they will be asked to answer, through Google Forms, a survey that contains the specific questions that are meant to be assigned to them. All the answers that are to be inputted by the participants will be compiled into two separate Google Sheets documents, one document for the control group and another for the experimental group as there are also two separate Google Forms for both, in which the data will be systematically arranged for better and easier understanding.

All the data gathered are to be considered as valid, as specified in the validity section, as the research team made sure to use the proper criteria for validity, utilizing it on all the particular aspects in which the study is concerned, from the type of participants to datas that will be gathered through them. As such, the strict set age range would be the foremost vital criteria of data due to the fact that it is within this scope in which the main receivers of the COVID-19 vaccines would be in. The participants' place of residence, as mentioned in the research locale, would also be one criteria of data validity as it is essential for the data to come from those who have resided in the Philippines amidst the pandemic. That being said, to ensure that the participants are able to provide genuine answers to the questions, the research team first made sure that the respondents, in actual fact, fit the set criteria for data collection. At the same time, as much as possible, the research team have also personally sent messages and communicated with the chosen individuals, making sure that they fit the criteria of the research and establish the validity of their responses to a significant extent. In addition to this, all the data that will be presented to the respondents of the survey are also proven to be valid as the research team made sure to obtain the COVID-19 efficacy results from a legitimate source, specifically the NDHE hospital.

Statistical Methods

Mann-Whitney U Tests

This nonparametric equivalent of the two sample t-test statistical tools will be used to compare two independent groups and can be used as an alternative for t-test when a certain assumption is violated. Since the researchers have prepared the experimental and control groups, Mann-Whitney U Tests shall be utilized since first, the dependent variable is an ordinal variable since likert scales are used to identify the confidence level of the groups and the factors that could affect their outlook on vaccines. Second, the two independent groups in which the experimental group shall be the one to be exposed with the test vaccine results of the NDHE frontliners unlike in the control group. Third, there is independence of observations between the two groups because there are different participants for each group. Lastly, the two variables are not normally distributed as well. In utilizing the IBM statistics calculator, the group shall set it to 0.5 as the confidence level and a two-tail test. From this, the group will be 95 percent sure of the data obtained as well as be able to identify whose group has a higher mean rank in terms of their confidence with vaccines.

CHAPTER FOUR:
RESULTS AND DISCUSSIONS

This chapter discusses the data analysis and findings from the experimental and control group with regards to their confidence level and outlook of COVID-19 vaccines. The purpose of this study is to find out if the vaccine test results from the NDHE hospital would have the experimental group yield a more positive view on the vaccines. A comprehensive description of the research methodology was given in Chapter three. The group utilized likert scale for this research which is an ordinal data and this will be analyzed through the use of descriptive statistics (bar graphs) and inferential statistics (Mann-Whitney U Tests). In comparing significant differences between the control and experimental groups, the p-value shall be less than 0.05.

Vaccine Test Results

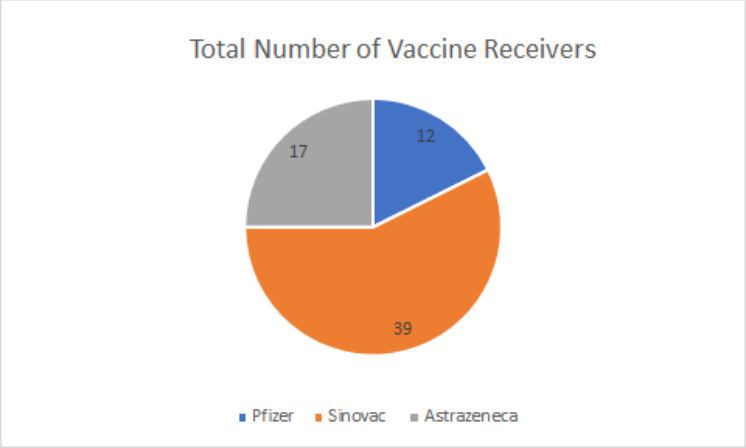


Chart 1.1. Total Number of Vaccinated NDHE Frontliners

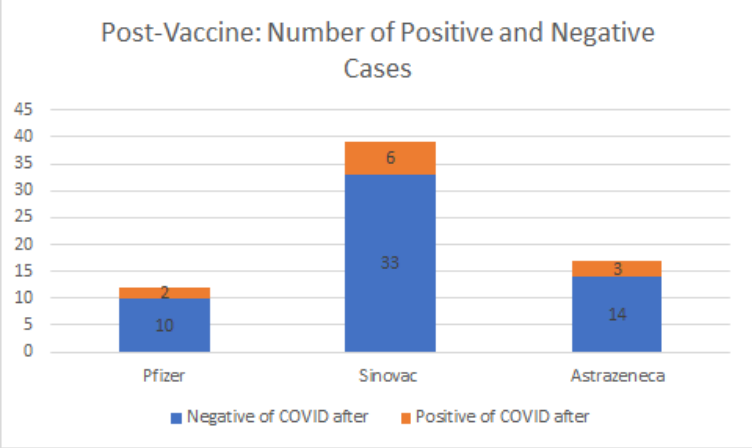


Chart 1.2. Number of Positive or Negative in COVID-19 from Vaccinated NDHE Frontliners

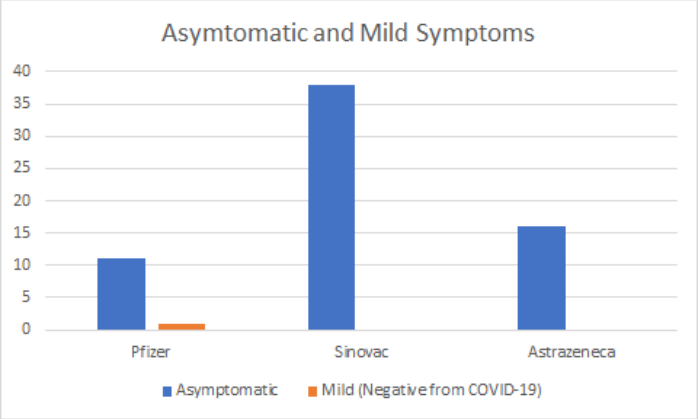


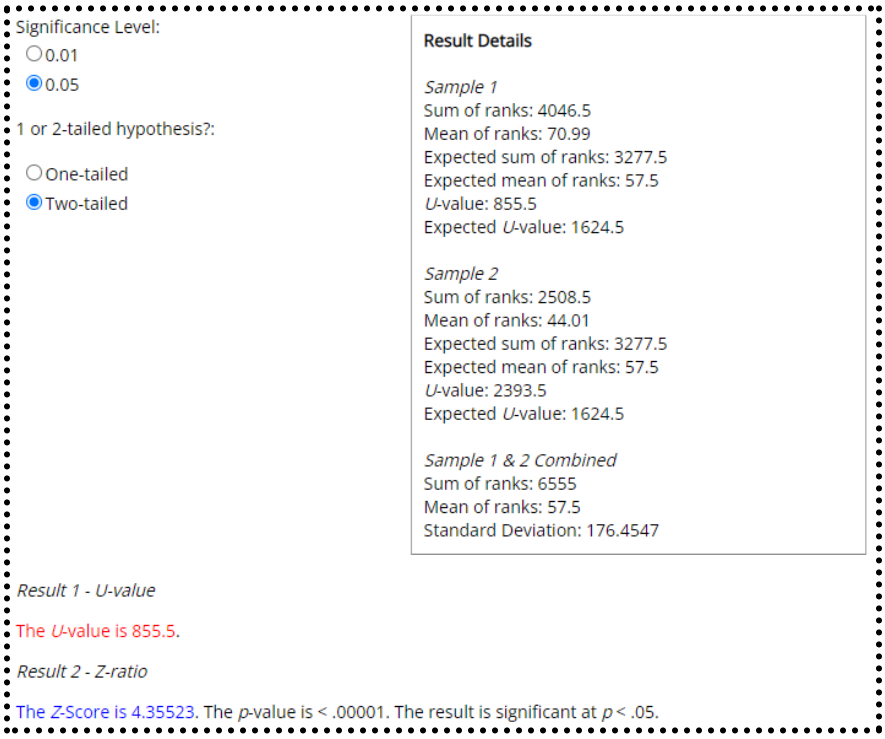
Chart 1.3. Asymptomatic and Mild Symptoms Found in NDHE Frontliners

The charts above show the number of NDHE Frontliners vaccinated with Pfizer, Sinovac, and Astrazeneca. According to the lab results of the hospital, Pfizer had 83.33% efficacy rate, Astrazeneca had 82.35% efficacy rate, and Sinovac had 84.62% efficacy rate. However, based on the *Chart 1.2.* Sinovac Vaccinated Frontliners had the greatest number of positive cases. These vaccine results were used by the researchers for the experimental group to see if these results would affect their outlook on COVID-19 vaccines. With regards to Chart 1.3. The results show that there was one frontliner who had a mild symptom of COVID-19 but was negative from the virus. This would be further explained in the discussions part of the paper. After gathering the data, the researchers have gathered the following results as shown:

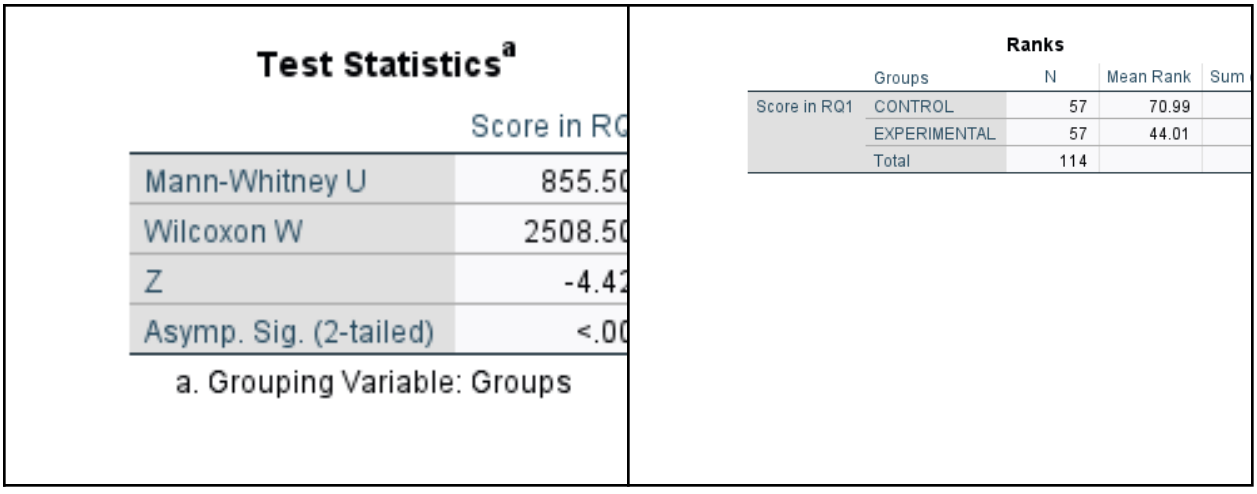
Confidence Level of the Experimental versus Control group

For this research question, the group utilized the Mann-Whitney U-Test because the significant differences between the control and experimental groups shall be analyzed to answer the question of whether the vaccine results of the frontliners would increase the confidence of the experimental group in getting vaccinated. It is valid for the group to use such statistical tools because the assumptions were followed. First, the dependent variables are ordinal variables mainly, the likert scale. Second, the independent variables are two independent groups which pertain to the control and experimental. Third, there is no relationship between the observations in each group or between the independent groups. Lastly, the two variables are not normally distributed.

- ***Null Hypothesis:*** *The confidence level of unvaccinated respondents in the experimental group is equal to the control group.*
- ***Alternative Hypothesis:*** *The confidence level of unvaccinated respondents in the experimental group is not equal to the control group.*



Data 1.1. Mann-Whitney U Test Results



Test Statistics[a]

	Score in RQ
Mann-Whitney U	855.50
Wilcoxon W	2508.50
Z	-4.42
Asymp. Sig. (2-tailed)	<.00

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum
Score in RQ1	CONTROL	57	70.99	
	EXPERIMENTAL	57	44.01	
	Total	114		

Data 1.2. SPSS Mann-Whitney U Test Results

Analysis: The study was able to show that the experimental group had a statistically significantly lower confidence level (44.01) compared to the control group (70.99) who did not see the results of the vaccinations. Therefore, there is a significant difference because the p-value (<0.01) is less than 0.05 which means the null hypothesis is rejected.

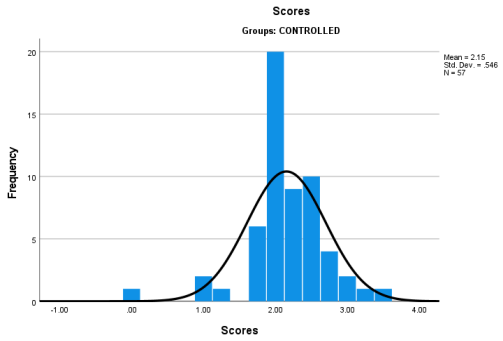
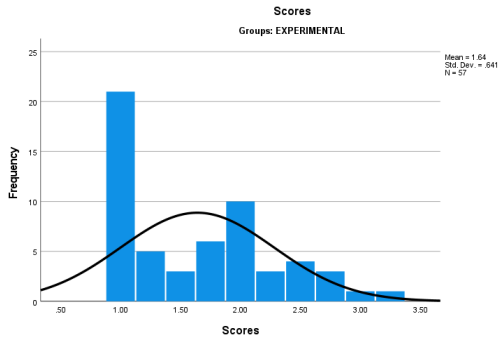
CONTROLLED GROUP	EXPERIMENTAL GROUP
	

Table 1.1. Histograms with Normal Curve (Controlled vs Experimental)

The two histograms above show the frequencies of the scores for the control and experimental group. It is evident how the experimental group is more distributed than the control group. This graph, through the mean and mean ranks, also reveals that even though the control group were not able to see the vaccine results of the frontliners, they have a positive outlook on the vaccines and are very confident enough to get vaccinated.

Different Factors that Affect the Experimental and Control Group's Outlook on Vaccines

1. Social
    a. I am NOT reliant anymore on the hoaxes, conspiracies, and rumors surrounding vaccination processes.

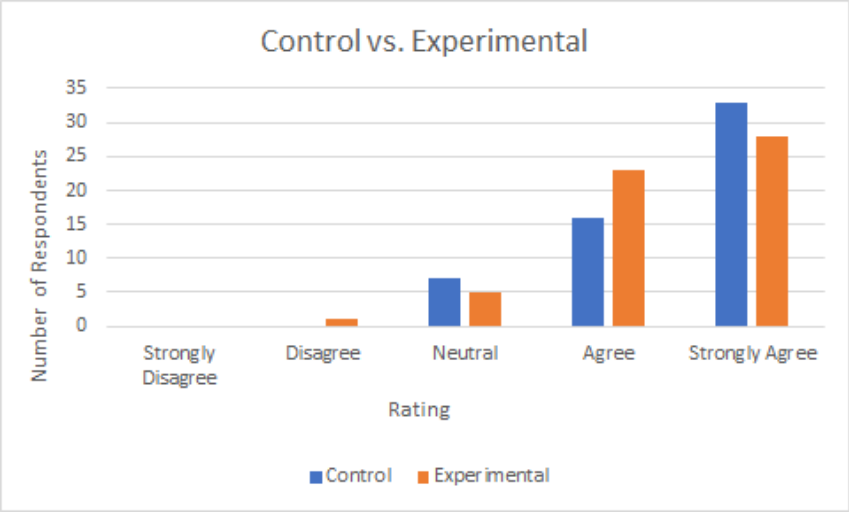


Figure 1.1 Social Factor (1)

Analysis: There is a hint of doubt in the disagree option in the "disagree" option of the experimental response. This may indicate that the participant may have some hesitation with regards to the validity of the results, which is why that participant still has to rely on other sources of information in order to create their own stand.

b. I feel confident that I can have my own stand regarding vaccination processes.

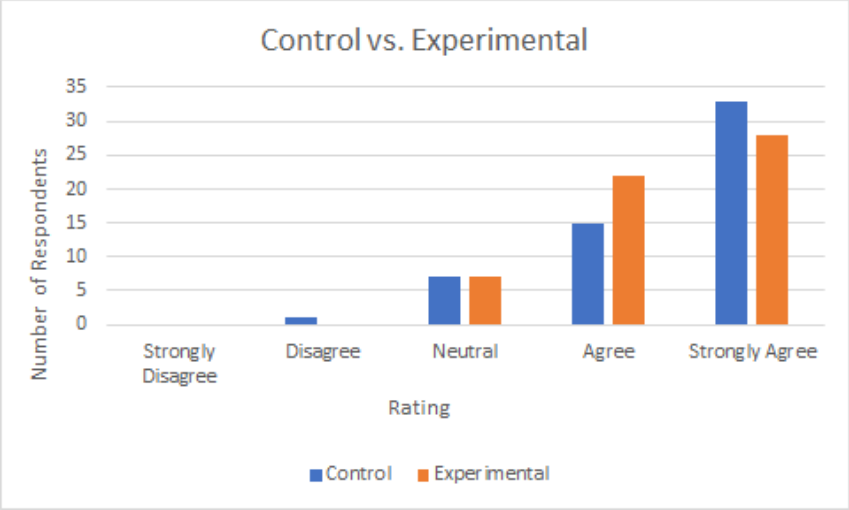


Figure 1.2 Social Factor (2)

Analysis: The concentration of the "strongly agree" responses in the experimental group have lowered compared to the control group. This may also indicate doubt and hesitation among the participants after reading the results, as it might not have passed whatever expectations they have (e.g. the vaccine that they thought will have a higher efficacy rate resulted poorly compared to the vaccine that they least chose).

c. I feel confident in encouraging others to also get vaccinated to prevent the transmission of COVID-19 to themselves and others as well.

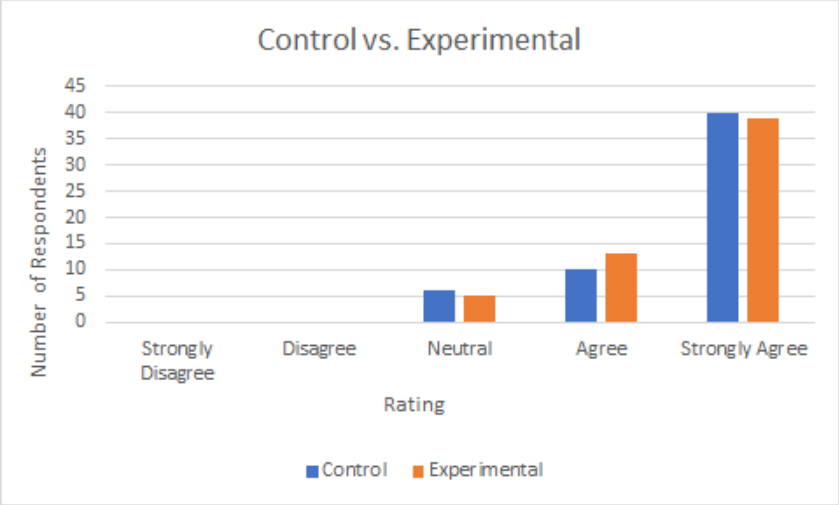


Figure 1.3 Social Factor (3)

Analysis: The participants possess generally positive attitudes towards vaccination encouragement for both groups, specifically noting that among the participants, none had chosen both disagree options. That being said, it could be inferred that they relatively agree with the efficacy of vaccination practices and its vital role in the control of the COVID-19 rates in the country.

2. Environmental

a. The accessibility of COVID-19 vaccines from my place of residence heavily INFLUENCES my decision to get vaccinated.

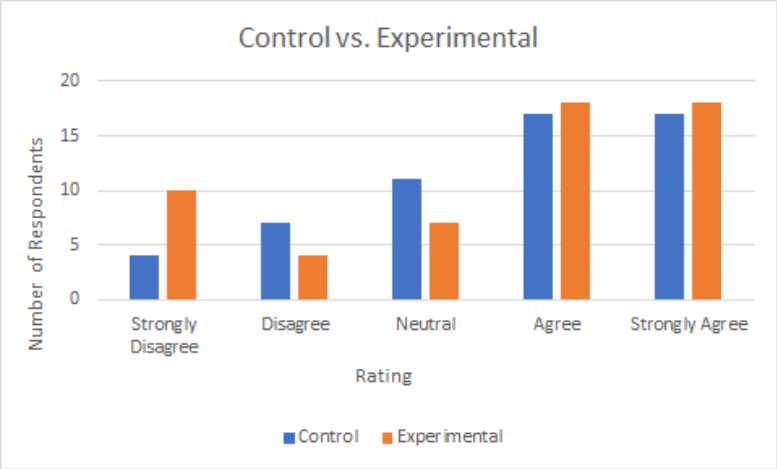


Figure 2.1 Environmental Factor (1)

Analysis : Even after showing the results for the experimental group, the reactions were still somewhat similar to one another. Overall, the participants were still biased to the location of where they will get vaccinated. A possible reason for the cautiousness despite showing test results is likely because the hospital the research team got the test results from is not the same place as their area, leaving them with still not as much information as to how safe or dangerous it is to get vaccinated in their area.

b. Climate is a leading factor in the dynamics of numerous infectious diseases, including those that are immune to vaccines. With this knowledge, I think that the climate in our area causes me to DOUBT the vaccine's efficacy.

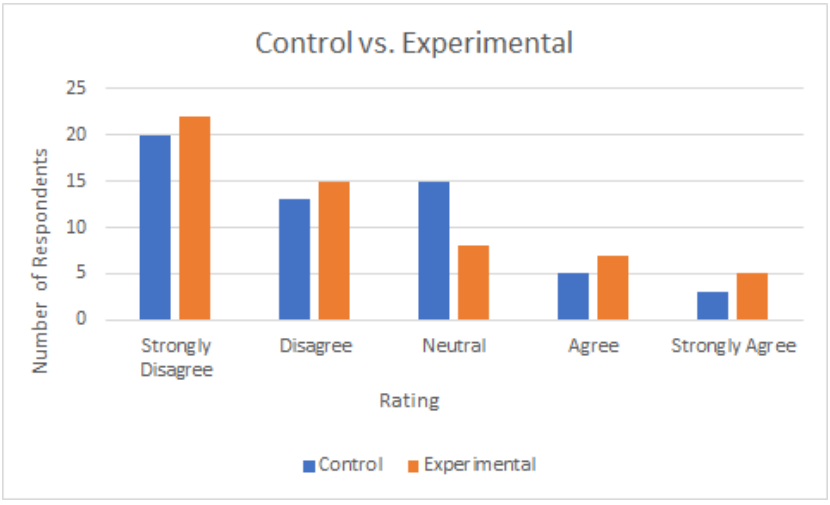


Figure 2.2 Environmental Factor (2)

Analysis : The attitude towards climate being a factor is somewhat calmer and more subdued compared to the other factors. Most of the participants seemed to have no issues with getting vaccinated no matter the climate of when they had the vaccine. That said, a small minority of the experimental group changed their opinion and regarded climate change as an important factor in their decision to get vaccinated. This is likely due to them seeing the dates in the test results sheet shown to them. They must have linked the dates with the seasons and noticed that all the positive cases have occurred during the latter half of the year, which is under the rainy season of the Philippines.

c. My environment (ex. family and peer perspectives, community policies, social norms, and social media) HINDER me from believing in the effectiveness of the vaccines.

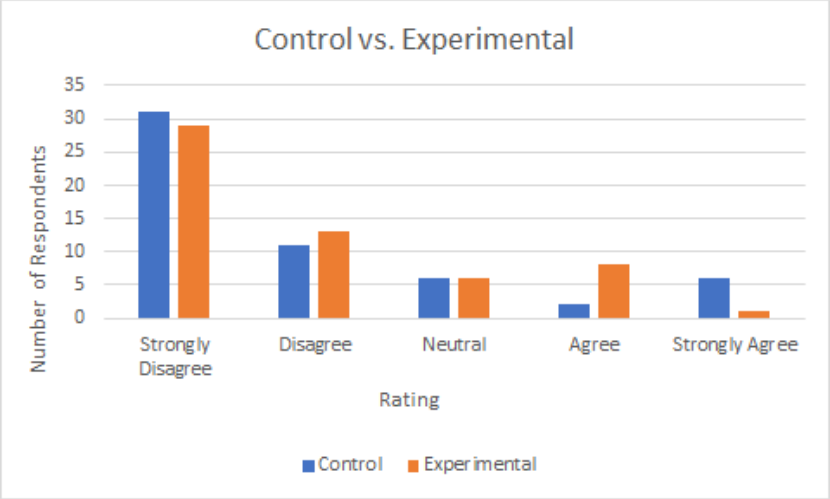


Figure 2.3 Environmental Factor (3)

Analysis: There is a significant difference between the control and experimental responses as there was a decrease in the degree of the "agree" responses. This may show that due to the results shown for the experimental group, these have strengthened their confidence to have an independent mindset regarding vaccination processes in this aspect.

3. Psychological

a. I DENY the existence of COVID-19 and its grave effects which means I do NOT believe that it can be solved through vaccination as claimed by scientific studies.

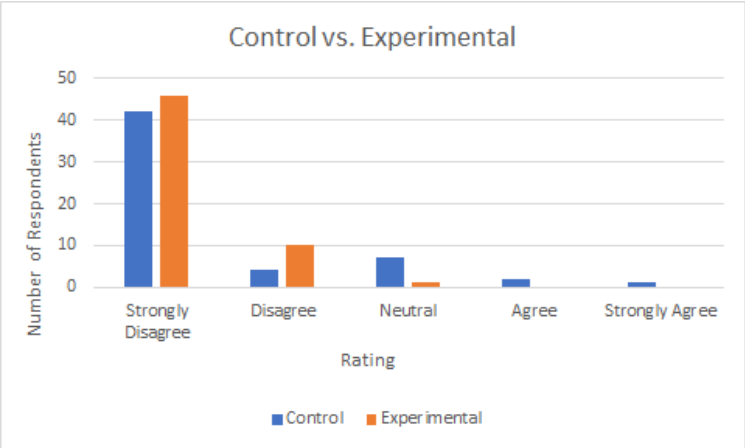


Figure 3.1 Psychological Factor (1)

Analysis: The graph indicates that although a small portion either have doubts or are completely in denial of the existence of COVID-19, most of the respondents were shown to believe otherwise. This could mean that their psychological tendencies of denial, due to the abrupt changes brought about by the pandemic, did not really affect their views on the vaccines.

b. Somewhat unfavorable COVID-19 vaccine results taken from previous news and studies SIGNIFICANTLY affect my perspective on the vaccination process.

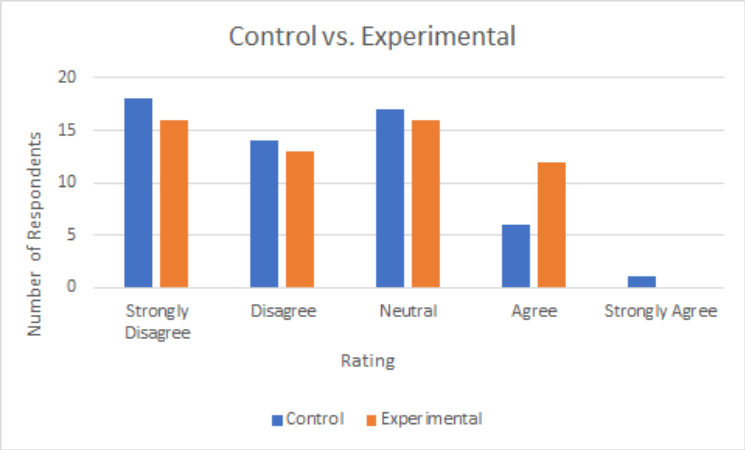


Figure 3.2 Psychological Factor (2)

Analysis: The graph indicates that although a small portion of the respondents either agree or are neutral when it comes to unfavorable COVID-19 vaccine results taken from previous news and studies, most of them still disagree that this factor does not really affect their perspective on the vaccination process. This could mean that the people who disagreed are not easily psychologically affected when it

comes to public information, while some who agreed show that they still mostly rely on it, thus affecting their perspectives.

c. I currently HAVE fears and apprehensions regarding vaccination uptake

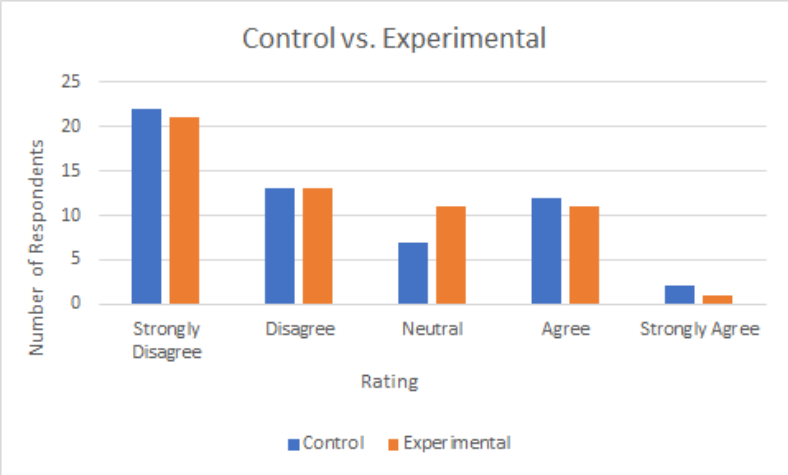


Figure 3.3 Psychological Factor (3)

Analysis: The participants generally do not have foreboding feelings regarding such, but it is undeniable that there is still a significant number of people who, to certain extents, are relatively affected by the fears that they have which could possibly heavily influence their decisions not to get vaccinated.

4. Biological

a. I have allergies or other health complications that make me HESITANT on whether I should take the vaccine.

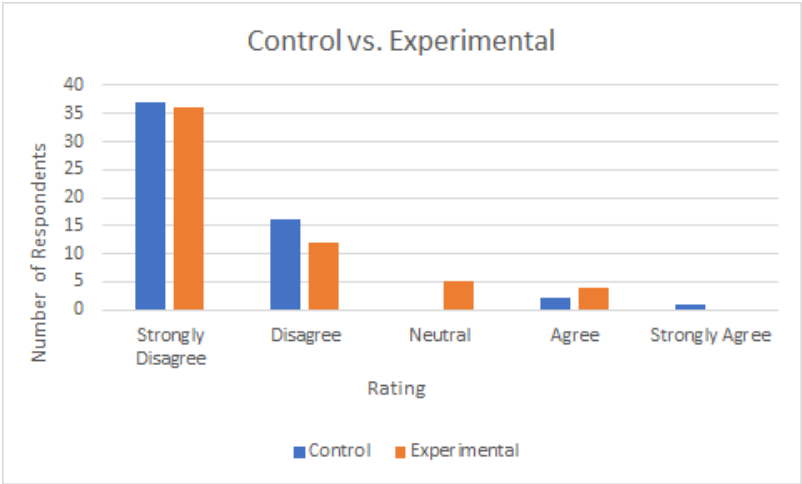


Figure 4.1 Biological Factor (1)

Analysis: Not applicable.

b. I DO NOT believe that my body will be able to handle the potency of the vaccine.

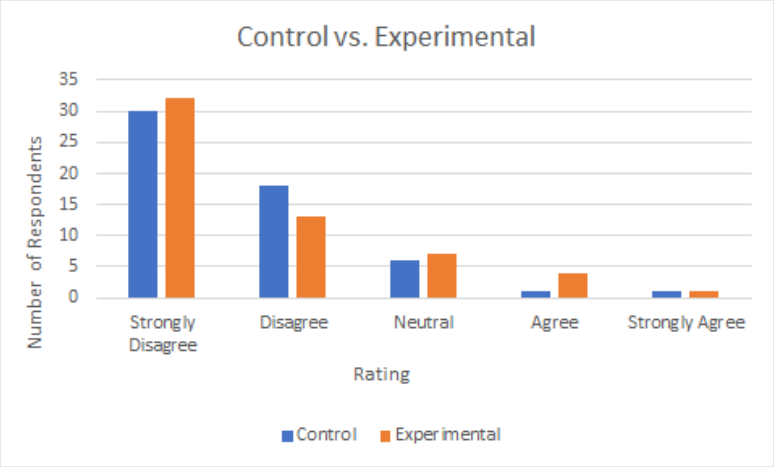


Figure 4.2 Biological Factor (2)

Analysis: The participants in general strongly believe that their bodies can handle the side effects and symptoms that the vaccine would give. However, there is still a number of participants who are still doubtful of whether or not their bodies could not take the effects of the vaccine.

c. Given my past health conditions, I think I might SUCCUMB to COVID-19 itself due to the vaccines.

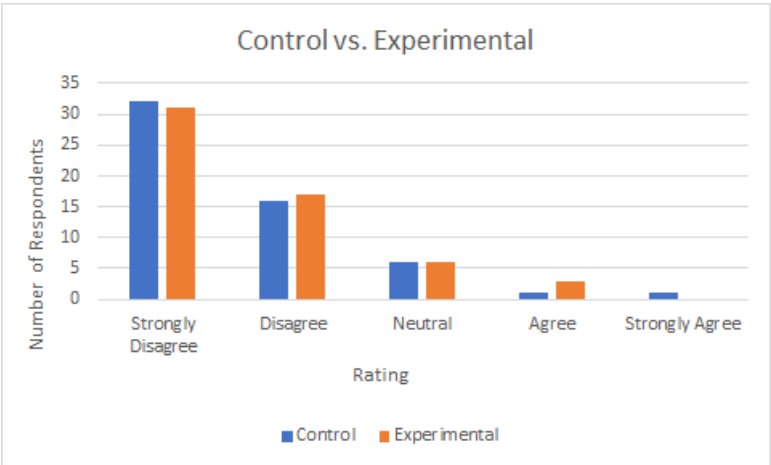


Figure 4.3 Biological Factor (3)

Analysis: A large majority of the participants have a strong disagreement with the statement, leading the researchers to believe that while most of them have not been vaccinated yet, they believe in the efficacy of the vaccines in preventing COVID-19, even without having to see the test results from the local hospital. The small increase in people who do feel as if they will get infected due to the vaccine is likely because of them seeing the positive cases of vaccinated people in the test results.

5. Economical

    a. Currently, I'm persistent in finding ways of getting vaccinated especially if the government decided to monetize this.

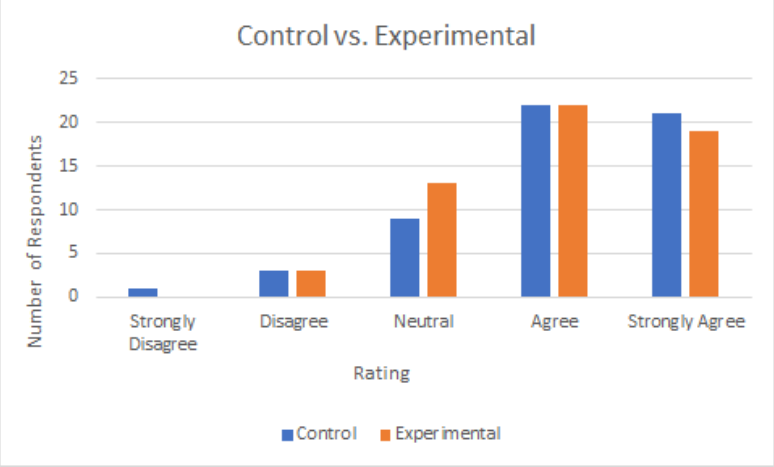


Figure 5.1 Economical Factor (1)

Analysis: Because the vaccination is free as of now, a large majority of the participants wish to take advantage of it and get vaccinated before it needs payment. Even those who were not as enthusiastic about getting vaccinated would prefer to have it while it is free than to pay for it; especially when you're not so confident about the vaccination procedure itself.

    b. I feel that the government should create ways in making sure that the vaccine is attainable for all.

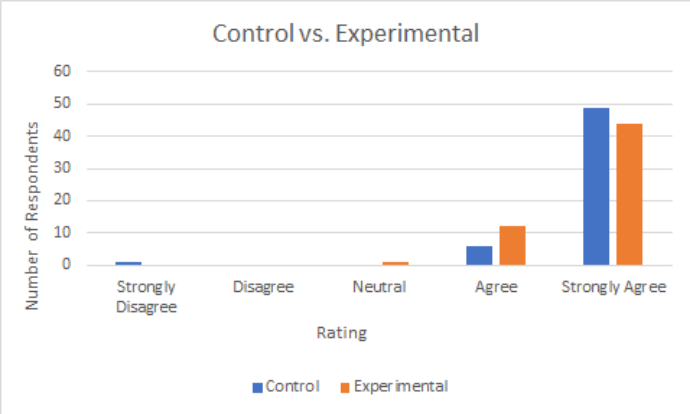


Figure 5.2 Economical Factor (2)

Analysis: Majority of the participants agree and strongly agree that the government should come up with different ways in ensuring that vaccines are attainable for all people. On another note, few participants are still unsure and others totally disagree with the government creating ways. This may be caused by the lack of trust in the government, after seeing their performance on other issues (corruption, drugs, etc.).

c. I think that getting vaccinated will cost me more financially.

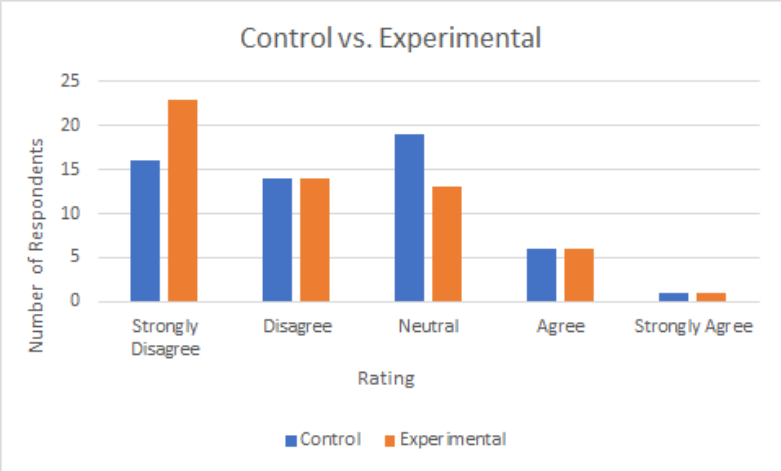


Figure 5.3 Economical Factor (3)

Analysis: The graph indicates that a small portion of the participants think that getting vaccinated will cost them financially, while most are either neutral or disagree. This could mean most of the participants are not really affected by their financial standing when it comes to getting vaccinated, while only some think otherwise.

6. Cultural

a. My cultural affinity GETS IN THE WAY of me being more confident in getting vaccinated.

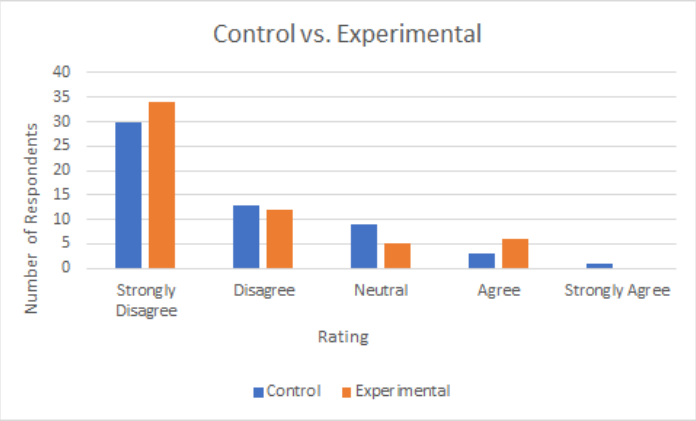


Figure 6.1 Cultural Factor (1)

Analysis: The graph indicates that only a small portion of the participants are affected by their cultural affinity when it comes to their confidence in getting vaccinated while most think otherwise. Similarly, this would then mean that most of the participants are not really affected by their culture in their confidence of getting vaccinated.

b. I have full trust in my cultures and religions, which is why I believe that the vaccines will be effective for me.

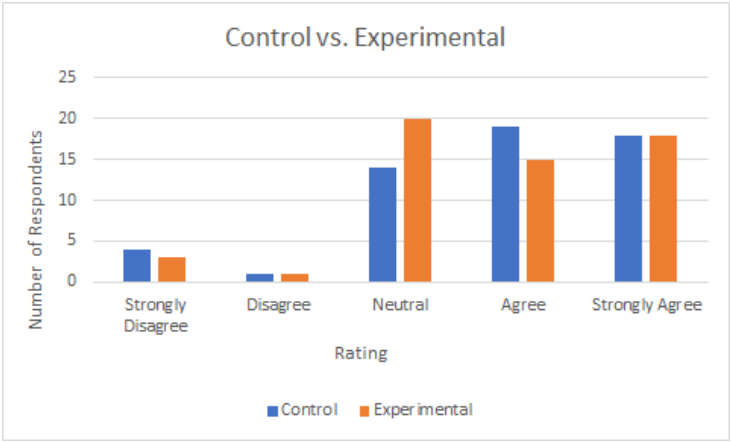


Figure 6.2 Cultural Factor (2)

Analysis: There is a generally positive response in the context of trust in cultures and religions which is related to one's confidence regarding vaccine uptake. On the other hand, as seen in the graph, the majority of the experimental group participants remain neutral on the matter which could mean that they are not all that reliant on their cultural and religious beliefs. Relative to this, it is also apparent that for the control group, a significant number of participants remain neutral as well which could possibly mean the same.

c. With my knowledge on my cultures and religion, vaccines will NOT help me in becoming resistant to COVID-19

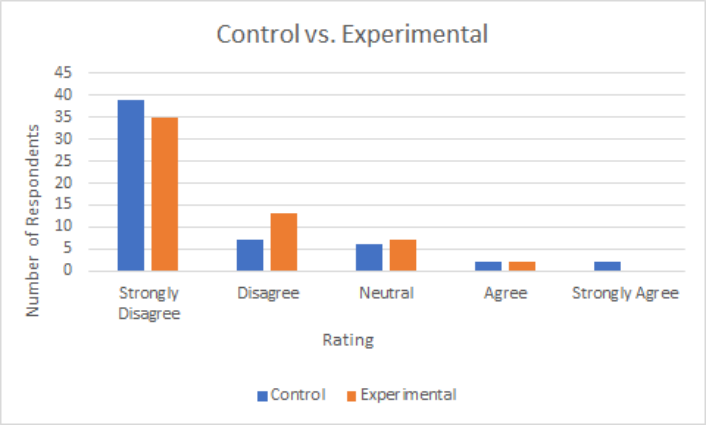


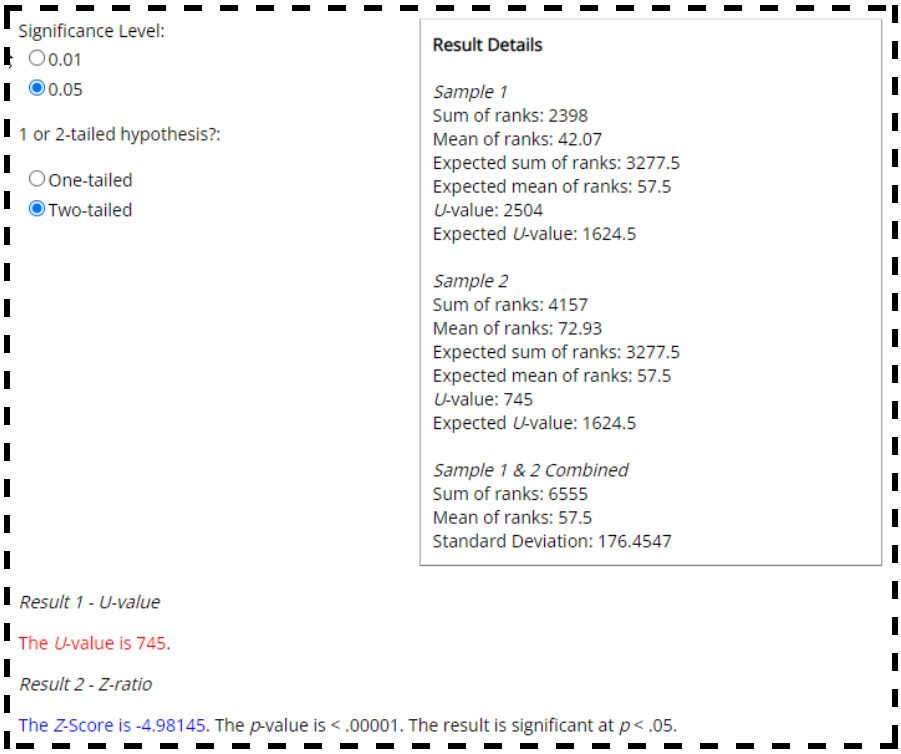
Figure 6.3 Cultural Factor (3)

Analysis: The fact that most of the participants disagree, this reflects that their culture and religions does not affect their beliefs in getting vaccinated or about the vaccines itself. This also tells that culture and religion do not have any correlation that may affect one's decision making. On the other hand, there are still a few participants that agree, which means that due to their culture and religion, they have their own perspective on the efficacy of these vaccines.

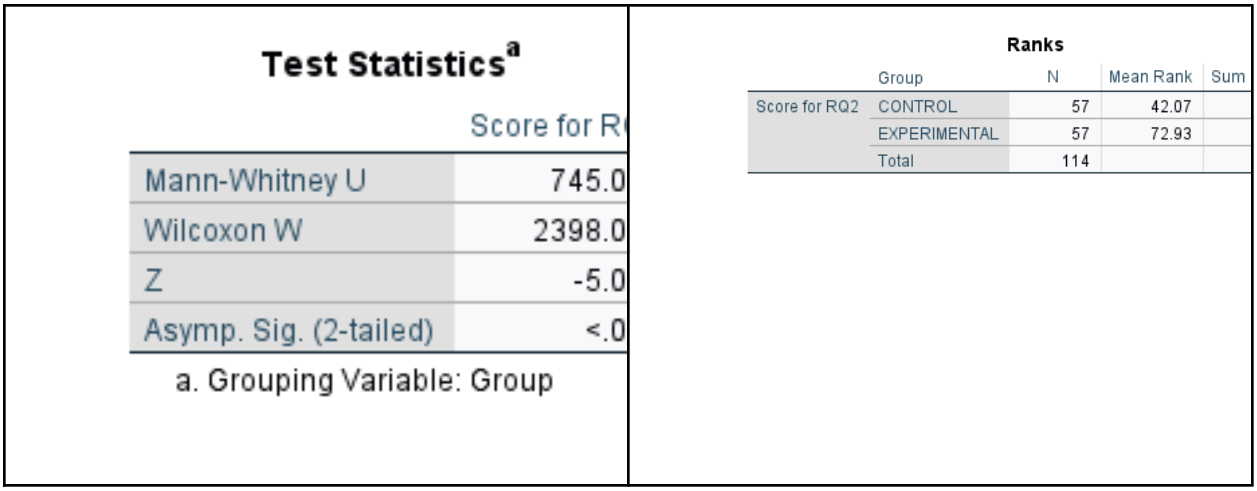
Effect of Vaccine Results to the Experimental Group

For this research question, the group utilized the Mann-Whitney U-Test because the significant differences between the control and experimental groups shall be analyzed to answer the question of the confidence of the respondents even without seeing the vaccine test results first. It is valid for the group to use such statistical tools because the assumptions were followed. First, the dependent variables are ordinal variables mainly, the likert scale. Second, the independent variables are two independent groups which pertain to the control and experimental. Third, there is no relationship between the observations in each group or between the independent groups. Lastly, the two variables are not normally distributed.

- ***Null Hypothesis:*** The confidence of the experimental group before seeing the results is equal to the control group.
- ***Alternative Hypothesis:*** The confidence of the experimental group before seeing the results is not equal to the control group.



Data 2.1. Mann-Whitney U Test Results



Test Statistics[a]

	Score for R
Mann-Whitney U	745.0
Wilcoxon W	2398.0
Z	-5.0
Asymp. Sig. (2-tailed)	<.0

a. Grouping Variable: Group

Ranks

	Group	N	Mean Rank	Sum
Score for RQ2	CONTROL	57	42.07	
	EXPERIMENTAL	57	72.93	
	Total	114		

Data 2.2. SPSS Mann-Whitney U Test Results

Analysis: The study was able to show that the experimental group had a statistically significantly higher confidence level (72.93) before seeing the data of vaccine results compared to the control group (42.07). Therefore, there is a significant difference because the p-value (<0.01) is less than 0.05 which means the null hypothesis is rejected.

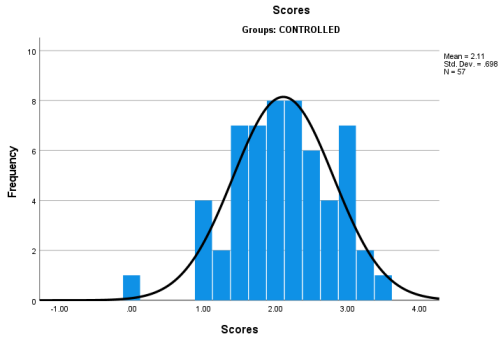
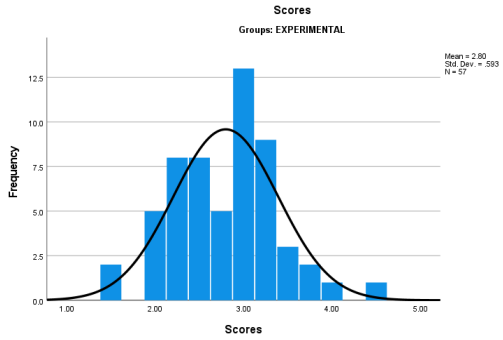
CONTROLLED GROUP	*EXPERIMENTAL GROUP*
	

Table 2.1. Histograms with Normal Curve (Controlled vs Experimental)

The two histograms above show the frequencies of the scores for the control and experimental group. In this scenario, the control group is more distributed when it comes to their scores. When it comes to the mean ranks, the experimental group had a higher confidence before seeing the results. This means that the vaccine results decreased the positive outlook of the experimental group with regards to vaccines since their mean ranks were lower compared to the control group after seeing the vaccine results. However, despite not seeing the results, the experimental group is already confident when it comes to vaccines.

Discussion

On the limited results provided by NDHE hospital

Due to certain restrictions such as security reasons, the research team ended up settling with the initial data that was provided by the NDHE hospital specified in **chart 1.1 and chart 1.2**, which does not include the data on WBC count, Antibodies, and Antigens. Thus instead, the research team decided to work with the data that they had, specifically the patient's ages, health status, vaccine received, and PCR Results for COVID-19. This is one of the limitations that will be recommended to be addressed by other researchers, which will be expounded later on in the next chapter.

On the labels of Mild Symptoms

Based on the data that was obtained from NDHE hospital, the results indicated that some of the vaccinated patients were labeled with mild symptoms despite being tested for COVID-19 as specified in **chart 1.3.** A reason for this could be due to the fact these mild symptoms might be originating from another disease that is present within the patient rather than from the COVID-19 virus itself. Some diseases that could have similar symptoms to COVID-19 would be Pneumonia, and flu wherein patients who experience them could experience coughs, shortness of breath, fever, and the such.

Vaccine Confidence Before and After Exposure of People to COVID-19 Results

The **data 1.1, data 1.2, and table 1.1,** show that the confidence level of the respondents in the experimental group is significantly lower than that of the control group after being exposed to the vaccine results of the frontliners. As for **data 2.1, data 2.2, and table 2.1**, it was revealed that the experimental group had a higher confidence level than of the control group before being exposed to the vaccine results. This may have been due to the result showing raw data, which when left as is, may have given different impressions on the participants. The respondents are left to discern and create their own stand with regards to their views and perspectives of the vaccines, and with only the given data, this may have caused them to doubt, hesitate, and be more cautious.

There are positive and negative implications of the results. Some negative implications of the test is how it reflects the overall confusion of people in interpreting and analyzing data. Without much explanation of the data, the participants began to become more hesitant as these may have not reflected their expectations. In the local and global setting, people can spread misinformation through these doubts and hesitations, which can lead to further hesitance and ill-developed health-related decisions.

On the other hand, this change in confidence implies how the participants are now more hesitant with the given data, suggesting how the participants have shown an increase in cautiousness towards health-related information. By being cautious, people learn how to discern whether information is true or fake, which helps lessen misinformation. This is one of the goals that the health sector must focus on more. Not only will it help the people become more discerning and knowledgeable of the different health information that they receive, but it can also help with lessening misinformation and creating better health-related decisions, most notably on getting vaccinated.

Factors Affecting Vaccine Confidence

Generally, only the information exposed to the experimental group is a factor that has affected their vaccine confidence especially when it was revealed that they had a lower confidence of getting vaccinated in **data 1.1, data 1.2, and table 1.1**. This reflects how vital health information is towards increasing or decreasing the confidence of the people, which is why exposure of health information that guarantees the understanding of the people is needed in order to ensure that they create the right health decisions. This will help the people create independent health decisions for themselves, and to also help others in protecting themselves through their knowledge of these health information.

CHAPTER FIVE:
CONCLUSION AND RECOMMENDATIONS

Major findings and its implications

There was a significant difference in the answers between the control group and the experimental group. Before reading the results, the experimental group had a more positive outlook on the vaccines compared to the controlled group, however after reading the results, the positive outlook of the experimental group decreased, ending up with a much lesser value than the controlled group. Here, it can be inferred that the experimental group's confidence changed after seeing the results, thus signifying that they were not as fully aware as they think they were on the actual data and statistics regarding the vaccination. Seeing the raw unfiltered data that was taken straight from the NDHE hospital likely made them doubt certain vaccine brands and their efficacy since the raw data must have been completely different from their initial knowledge on the vaccines and their efficacy. The change of opinion from the participants proves that people need to be shown data before they choose anything. Information is a major factor for many people and the absence of it can change their stance on vaccination by a certain degree. Overall, in the final analysis, the study proved that the experimental group, which consists of the people who saw the results that were obtained from the NDHE hospital, were shown to have a significantly lower confidence level, with the value of 44.01, compared to the control group, which consists of the people who did not see the results that were obtained from NDHE hospital, with the value of 70.99. The research team therefore rejects the null hypothesis which states that the confidence level of unvaccinated respondents in the experimental group is equal to the control group, since the p-value ended up with a value that is less than 0.05

Importance of Findings and Contributions to Adding Research Knowledge

With the different findings that were mentioned in this paper, the research team believes that this study will serve as an effective additional reference for vaccination studies, knowledge, and information which could be of great help in further research on COVID-19 as well as other possible diseases in the future. Moreover, this could serve as a great benefit and additional knowledge for the Philippines, specifically to those people who are focused on these types of subject matters, since there is not that much existing Philippine-based knowledge related to the conducted study, regarding vaccine hesitancy, to begin with. The study can also promote herd immunity, which is one method of indirect protection from infectious diseases such as COVID-19. In the same way, this can reduce vaccine hesitancy among those who have doubts with regards to its efficacy.

Recommendations

For further analysis and development of the study in the promotion of overall vaccine confidence in the Philippines, firstly, the group encourages future researchers to conduct a pretest-posttest, rather than a one-shot, in order to see if there really is a difference between the control and experimental set-ups. It would also be more comprehensive for future studies on the said topic to include factors that the group was not able to consider on more extensive levels such as the participants' WBC counts, Antibodies, and Antigens as well. At the same time, as the pandemic persists over time, the synthesis and modifications of COVID-19 vaccines would persist as well. That being said, it would also be beneficial for future researchers to factor in and include other available and accessible vaccine brands widely used in the country. Relative to this, as the authorization of vaccination services for minors aged 12 to 17 was only made during the course of time in which the researchers were in the data collection process with already set criteria, the group would also recommend to lower the age range of participants to the age of 12 for a more substantial grasp on the subject in terms of participant diversity.

APPENDIX I: BIBLIOGRAPHY

Journals:

Bono, S. A., Faria de Moura Villela, E., Siau, C. S., Chen, W. S., Pengpid, S., Hasan, M. T., Sessou, P., Ditekemena, J. D., Amodan, B. O., Hosseinipour, M. C., Dolo, H., Siewe Fodjo, J. N., Low, W. Y., & Colebunders, R. (2021). Factors Affecting COVID-19 Vaccine Acceptance: An International Survey among Low- and Middle-Income Countries. Vaccines, 9(5), 515. https://doi.org/10.3390/vaccines9050515

Campanero, L. G. (2019). "LEGAL and ETHICAL CHALLENGES of the NURSING PROFESSION during the COVID-19 PANDEMIC," 1–12.

Dovjak, M., & Kukec, A. (2019). Identification of Health Risk Factors and Their Parameters. *Creating Healthy and Sustainable Buildings*, 83–120. https://doi.org/10.1007/978-3-030-19412-3_3

Edrada, E. M., Lopez, E. B., Villarama, J. B., Salva Villarama, E. P., Dagoc, B. F., Smith, C., Sayo, A. R., Verona, J. A., Trafalgar-Arches, J., Lazaro, J., Balinas, E. G. M., Telan, E. F. O., Roy, L., Galon, M., Florida, C. H. N., Ukawa, T., Villanueva, A. M. G., Saito, N., Nepomuceno, J. R., & Ariyoshi, K. (2020). First COVID-19 infections in the Philippines: a case report. Tropical Medicine and Health, 48(1). https://doi.org/10.1186/s41182-020-00203-0

El-Elimat, T., AbuAlSamen, M. M., Almomani, B. A., Al-Sawalha, N. A., & Alali, F. Q. (2021, April 23). Acceptance and attitudes toward COVID-19 vaccines: A cross-sectional study from Jordan. PLOS. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0250555#sec015

Feinstein, L., Sabates, R., Anderson, T., Sorhaindo, A., & Hammond, C. (2006). *What are the effects of education on health?* . https://www.oecd.org/education/innovation-education/37425753.pdf

Kelly, M. P. (2021). The relation between the social and the biological and COVID-19. *Public Health*, *196*, 18–23. https://doi.org/10.1016/j.puhe.2021.05.003

MacDonald, N. E., & Dubé, E. (2018). Addressing vaccine hesitancy in immunization programs, clinics and practices. *Paediatrics & Child Health*, 23(8), 559. https://doi.org/10.1093/pch/pxy131

Oduwole et.al. ((2021, Feb 5). Estimating vaccine confidence levels among future healthcare workers and their trainers (a specific university in Cape Town, South Africa). MedRxiv. https://www.medrxiv.org/content/10.1101/2021.02.03.21251068v1.full.pdf

Oxford COVID Vaccine Trial Group†. (2020, Dec 8). Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (Astrazeneca). Lancet. https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2932661-1

Pfizer Inc. (2021, Aug 23). Vaccine Information Fact Sheet for Recipients and Caregivers about Comirnaty and Pfizer-Biotech Covid Vaccine. Food and Drug Administration (FDA). https://www.fda.gov/media/144414/download

Zhang et.al. (2020, Nov 17). Safety, tolerability, and immunogenicity of an inactivated SARS-CoV-2 vaccine in healthy adults aged 18–59 years. Lancet. https://www.thelancet.com/action/showPdf?pii=S1473-3099%2820%2930843-4

Books:

Flynn et.al (2014). The Hr Function in Healthcare. Page 15. Healthcare Human Resource Management

Murphy, K., & Weaver, C. (2017). *Janeway's Immunobiology*. Page 30-55. Garland Science, Taylor & Francis Group.

Levison, W., Jawetz, E. (1998). *Medical Microbiology and Immunology.* Page 314-321 Appleton & Lange, Simon and Schuster Company.

Abbas, A., Lichtman, A., & Pillai, S. (2016). *Basic Immunology 5th Edition*. Page 40-70. Elsevier Inc.
Doerder, P. (2009). *General Biology*. Glencoe.

Websites:

Alfonso, C., Dayrit, M., Mendoza, R., & Ong, M. (2021, March 9). From Dengvaxia to Sinovac: Vaccine hesitancy in the Philippines. The Diplomat. https://thediplomat.com/2021/03/from-dengvaxia-to-sinovac-vaccine-hesitancy-in-the-philippines/

FOLLOW PRIORITIZATION AND WAIT FOR YOUR TURN, GOVT WILL SECURE VACCINES FOR ALL – DOH, NTF | Department of Health website. (2021). Doh.gov.ph. https://doh.gov.ph/doh-press-release/FOLLOW-PRIORITIZATION-AND-WAIT-FOR-YOUR-TURN-GOVT-WILL-SECURE-VACCINES-FOR-ALL-DOH-NTF

Herndon, J. (2021, May 28). Everything You Want to Know About the Pfizer-BioNTech Vaccine Efficacy. Healthline; Healthline Media. https://www.healthline.com/health/vaccinations/pfizer-vaccine-efficacy#efficacy-comparisons

Know Your Vaccines (Vaccine Matrix: Current Evidence) | Department of Health website. (2021). Doh.gov.ph. https://doh.gov.ph/vaccines/know-your-vaccines

New Variants of Coronavirus: What You Should Know. (2020). https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/a-new-strain-of-coronavirus-what-you-should-know

Reuters. (2021, July 22). Two doses of Pfizer, AstraZeneca shots effective against Delta variant: study. Reuters; Reuters. https://www.reuters.com/business/healthcare-pharmaceuticals/two-doses-pfizer-astrazeneca-shots-effective-against-delta-variant-study-finds-2021-07-21/

The Diplomat. (2021, March 9). From Dengvaxia to Sinovac: Vaccine Hesitancy in the Philippines. https://thediplomat.com/2021/03/from-dengvaxia-to-sinovac-vaccine-hesitancy-in-the-philippines

What is the efficacy rate of each available vaccine? | Department of Health website. (2021). Doh.gov.ph. https://doh.gov.ph/vaccines/what-is-the-efficacy-rate-of-each-available-vaccine

Edwards, K., & Orenstein, W. (2021, July). *COVID-19: Vaccines to prevent SARS-CoV-2 infection*. Up To Date. https://www.uptodate.com/contents/covid-19-vaccines-to-prevent-sars-cov-2-infection?search=vaccine%20work&source=search_result&selectedTitle=20~150&usage_type=default&display_rank=20

Harrison, R. (2021, July). COVID-19: Occupational health issues for health care workers. Up To Date. https://www.uptodate.com/contents/covid-19-occupational-health-issues-for-health-care-workers?search=covid-19&source=search_result&selectedTitle=23~150&usage_type=default&display_rank=23

The Straits Times. (2021, September 28). Philippines approves Covid-19 vaccine jabs for kids as young as 12. The Straits Times. https://www.straitstimes.com/asia/se-asia/philippines-approves-covid-19-jabs-for-kids-as-young-as-12

APPENDIX II: METHODOLOGY

Appendix 1: Table of Specifications

Research Question	Variables	Type of Data	Questionnaire	Statistics
Will the obtained results increase the confidence of the unvaccinated respondents in getting vaccinated?	Confidence	Ordinal: Likert	On a scale of 1-5 where 5 is the highest, (After reading the results), how open are you to getting vaccinated right now? 1 2 3 4 5 How much did the results affect your **positive** outlook when it comes to vaccines? 1 2 3 4 5 How much did your vaccine hesitancy lessen through reading the results? 1 2 3 4 5 How convinced are you that vaccines will effectively work through the given results? 1 2 3 4 5	Mann-Whitney U Tests
What were the different factors that contributed to the unvaccinated respondents'	Confidence [test results]	Ordinal: Likert	*(Refer appendix 1.1)*	*Descriptive Statistics: Bar Graph*

understanding of the health information about vaccination **BEFORE** presenting the data to them?	Other Extraneous Variables			
What were the different factors that contributed to the unvaccinated respondents' understanding of the health information about vaccination **AFTER** presenting the data to them?	Confidence [test results] Other Extraneous Variables	Ordinal: Likert	*(Refer to appendix 1.2)*	*Descriptive Statistics: Bar Graph*
How confident were the unvaccinated respondents in receiving the doses of the COVID-19 vaccines before seeing the data gathered?	Confidence	Ordinal: Likert	How eager are you to get vaccinated? 1 2 3 4 5 How much do you believe in vaccine efficacy? 1 2 3 4 5 To what extent do you have vaccine safety concerns (dangerous side effects, ineffective results, possibility of fatalities, etc)?	Mann-Whitney U Tests

			1 2 3 4 5 How often do you read or hear about unfavorable outcomes online following the vaccine rollout in the country? 1 2 3 4 5	

Appendix 1.1: Questions for research question #2

Before reading the given results, the following can be applied for me:					
Social Factor	I am NOT reliant anymore on the hoaxes, conspiracies, and rumors surrounding vaccination processes.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel confident that I can have my own stand regarding vaccination processes.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel confident in encouraging others to also get vaccinated to prevent the transmission of COVID-19 to themselves and others as well.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Environmental Factor	The accessibility of COVID-19 vaccines from my place of residence heavily INFLUENCES my decision to get vaccinated.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

	Climate is a leading factor in the dynamics of numerous infectious diseases, including those that are immune to vaccines. With this knowledge, I think that the climate in our area causes me to DOUBT the vaccine's efficacy.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	My environment (ex. family and peer perspectives, community policies, social norms, and social media) HINDER me from believing in the effectiveness of the vaccines.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Psychological Factor	I DENY the existence of COVID-19 and its grave effects which means I do NOT believe that it can be solved through vaccination as claimed by scientific studies.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Somewhat unfavorable COVID-19 vaccine results taken from previous news and studies SIGNIFICANTLY affect my perspective on the vaccination process.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I currently HAVE fears and apprehensions regarding vaccination uptake.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Biological Factor	I have allergies or other health complications that make me HESITANT on whether I should take the vaccine.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I DO NOT believe that my body will be able to handle the potency of the vaccine.				

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Given my past health conditions, I think I might SUCCUMB to COVID-19 itself due to the vaccines.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Economical Factor	Currently, I'm persistent in finding ways of getting vaccinated should the government have decided to monetize this.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel that the government should create ways in making sure that the vaccine is attainable for all.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I think that getting vaccinated will cost me more financially.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Cultural Factor	My cultural affinity GETS IN THE WAY of me being more confident in getting vaccinated.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I have full trust in my cultures and religions, which is why I believe that the vaccines will be effective for me.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

	With my knowledge on my cultures and religion, vaccines will NOT help me in becoming resistant to COVID-19.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Appendix 1.2: Questions for research question #3

After reading the given results, the following can be applied for me:					
Social Factor	I am not reliant anymore on the hoaxes, conspiracies, and rumors surrounding vaccination processes.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel confident that I can have my own stand regarding vaccination processes.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel confident in encouraging others to also get vaccinated to prevent the transmission of COVID-19 to themselves and others as well.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Environmental Factor	The accessibility of COVID-19 vaccines from my place of residence heavily influence my decision to get vaccinated.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Climate is a leading factor in the dynamics of numerous infectious diseases, including those that are immune to vaccines. With this knowledge and after reading the results, I think that the climate in our area causes me to doubt the vaccine's efficacy.				

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	After reading the results, my environment (ex. family and peer perspectives, community policies, social norms, and social media) still hinder me from believing in the effectiveness of the vaccines.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Psychological Factor	I perceive vaccination uptake as an essential proceeding to restore the country, bringing it back to normality through the concept of "Herd Immunity" as claimed by the Scientific studies.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	Somewhat unfavorable COVID-19 vaccine results taken from previous news and studies now insignificantly affect my perspective on the vaccination process.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	My previous fears and apprehensions regarding vaccination uptake have been amended overall due to the results and additional information presented to me.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Biological Factor	I am now aware of how allergies or other health complications are handled when I take the vaccine.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I STILL DO NOT believe that my body will be able to handle the potency of the vaccine.				

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	After reading the results, I still think that I might succumb to COVID-19 itself due to the vaccines given my past health conditions.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Economical Factor	After reading the results, I'm now more persistent in finding ways of getting vaccinated should the government have decided to monetize this.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I feel that the government should create ways in making sure that the vaccine is attainable for all.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I think that getting vaccinated will cost me more financially.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Cultural Factor	After reading the results, despite me having cultural affinity, this STILL GETS IN THE WAY of me being more confident in getting vaccinated.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I have full trust in my cultures and religions, which is why I believe that the vaccines will be effective for me.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

	After reading the results, I still believe that with my knowledge on my cultures and religion, vaccines will NOT help me in becoming resistant to COVID-19.				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Appendix 1.3: Non-survey research questions

Non-survey Research Questions (Vaccine Results)			
Research Question	Variables	Type of Data	Statistics
How **efficient** are the vaccines based on the presented data and results?	Astrazeneca, Sinovac, and Pfizer Efficacies **(WBC count, Antibodies, and Antigens)**	Ratio Data	Descriptive Statistics (Graph with computation list from the laboratory results.)
What were the **common symptoms** observed by the local hospital workers when patients were given doses of these vaccines?	Astrazeneca, Sinovac, and Pfizer usual symptoms **(Symptom status from COVID-19)**	Nominal Data	Descriptive Statistics
Given the effects of the vaccines, are there **underlying symptoms** that are still present in the vaccinated patients?	Underlying symptoms present in the vaccinated patients.	Ordinal Data (Mild, Moderate, Severe)	Descriptive Statistics

	(Mild, Moderate, or Severe COVID-19 Symptoms)		

Appendix 2: Results shown in the questionnaire (for the experimental group survey)

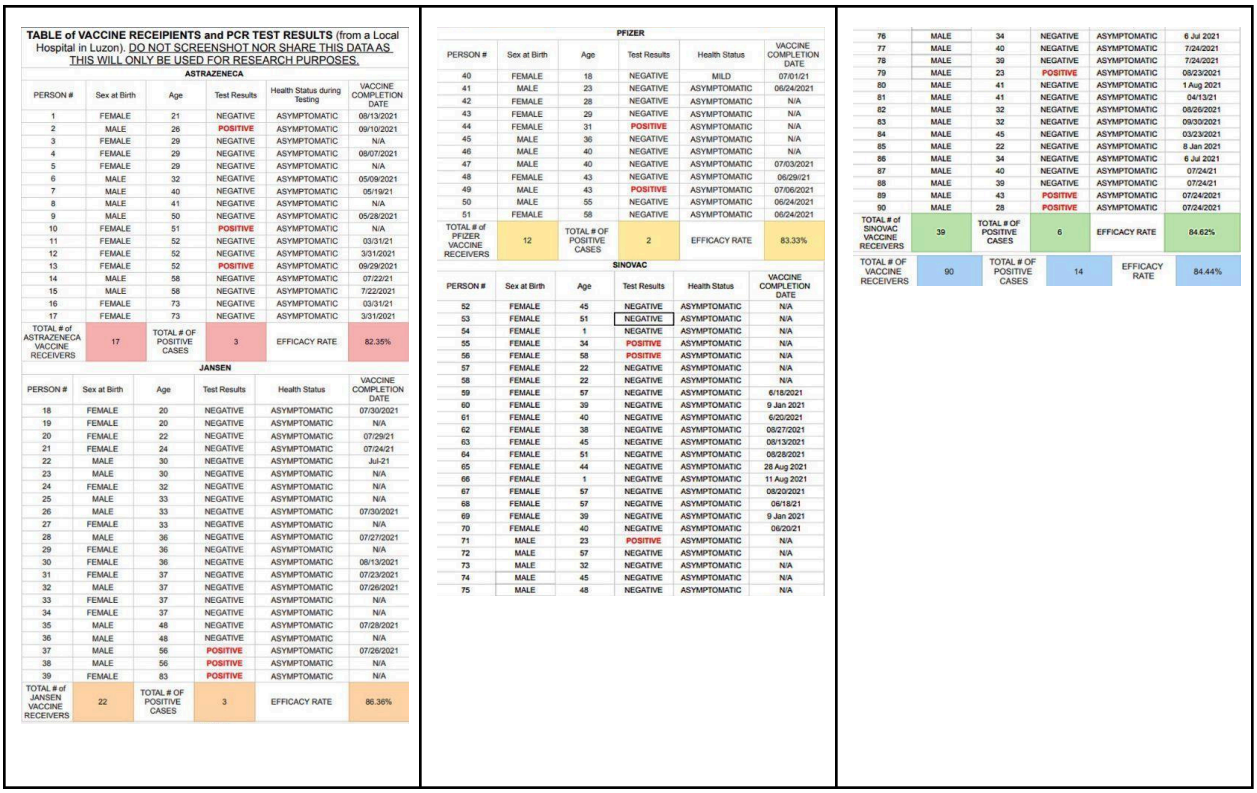


TABLE of VACCINE RECEIPIENTS and PCR TEST RESULTS (from a Local Hospital in Luzon). DO NOT SCREENSHOT NOR SHARE THIS DATA AS THIS WILL ONLY BE USED FOR RESEARCH PURPOSES.

ASTRAZENECA

PERSON #	Sex at Birth	Age	Test Results	Health Status during Testing	VACCINE COMPLETION DATE
1	FEMALE	21	NEGATIVE	ASYMPTOMATIC	08/13/2021
2	MALE	26	POSITIVE	ASYMPTOMATIC	09/10/2021
3	FEMALE	29	NEGATIVE	ASYMPTOMATIC	N/A
4	FEMALE	29	NEGATIVE	ASYMPTOMATIC	08/07/2021
5	FEMALE	29	NEGATIVE	ASYMPTOMATIC	N/A
6	MALE	32	NEGATIVE	ASYMPTOMATIC	05/09/2021
7	MALE	40	NEGATIVE	ASYMPTOMATIC	05/19/21
8	MALE	41	NEGATIVE	ASYMPTOMATIC	N/A
9	MALE	50	NEGATIVE	ASYMPTOMATIC	05/28/2021
10	FEMALE	51	POSITIVE	ASYMPTOMATIC	N/A
11	FEMALE	52	NEGATIVE	ASYMPTOMATIC	03/31/21
12	FEMALE	52	NEGATIVE	ASYMPTOMATIC	3/31/2021
13	FEMALE	52	POSITIVE	ASYMPTOMATIC	09/29/2021
14	MALE	58	NEGATIVE	ASYMPTOMATIC	07/22/21
15	MALE	58	NEGATIVE	ASYMPTOMATIC	7/22/2021
16	FEMALE	73	NEGATIVE	ASYMPTOMATIC	03/31/21
17	FEMALE	73	NEGATIVE	ASYMPTOMATIC	3/31/2021
TOTAL # of ASTRAZENECA VACCINE RECEIVERS	17	TOTAL # OF POSITIVE CASES	3	EFFICACY RATE	82.35%

JANSEN

PERSON #	Sex at Birth	Age	Test Results	Health Status	VACCINE COMPLETION DATE
18	FEMALE	20	NEGATIVE	ASYMPTOMATIC	07/30/2021
19	FEMALE	20	NEGATIVE	ASYMPTOMATIC	N/A
20	FEMALE	22	NEGATIVE	ASYMPTOMATIC	07/29/21
21	FEMALE	24	NEGATIVE	ASYMPTOMATIC	07/24/21
22	MALE	30	NEGATIVE	ASYMPTOMATIC	Jul-21
23	MALE	30	NEGATIVE	ASYMPTOMATIC	N/A
24	FEMALE	32	NEGATIVE	ASYMPTOMATIC	N/A
25	MALE	33	NEGATIVE	ASYMPTOMATIC	N/A
26	MALE	33	NEGATIVE	ASYMPTOMATIC	07/30/2021
27	FEMALE	33	NEGATIVE	ASYMPTOMATIC	N/A
28	MALE	36	NEGATIVE	ASYMPTOMATIC	07/27/2021
29	FEMALE	36	NEGATIVE	ASYMPTOMATIC	N/A
30	FEMALE	36	NEGATIVE	ASYMPTOMATIC	08/13/2021
31	FEMALE	37	NEGATIVE	ASYMPTOMATIC	07/23/2021
32	MALE	37	NEGATIVE	ASYMPTOMATIC	07/26/2021
33	FEMALE	37	NEGATIVE	ASYMPTOMATIC	N/A
34	FEMALE	37	NEGATIVE	ASYMPTOMATIC	N/A
35	MALE	48	NEGATIVE	ASYMPTOMATIC	07/28/2021
36	MALE	48	NEGATIVE	ASYMPTOMATIC	N/A
37	MALE	56	POSITIVE	ASYMPTOMATIC	07/26/2021
38	MALE	56	POSITIVE	ASYMPTOMATIC	N/A
39	FEMALE	83	POSITIVE	ASYMPTOMATIC	N/A
TOTAL # of JANSEN VACCINE RECEIVERS	22	TOTAL # OF POSITIVE CASES	3	EFFICACY RATE	86.36%

PFIZER

PERSON #	Sex at Birth	Age	Test Results	Health Status	VACCINE COMPLETION DATE
40	FEMALE	18	NEGATIVE	MILD	07/01/21
41	MALE	23	NEGATIVE	ASYMPTOMATIC	06/24/2021
42	FEMALE	28	NEGATIVE	ASYMPTOMATIC	N/A
43	FEMALE	29	NEGATIVE	ASYMPTOMATIC	N/A
44	FEMALE	31	POSITIVE	ASYMPTOMATIC	N/A
45	MALE	36	NEGATIVE	ASYMPTOMATIC	N/A
46	MALE	40	NEGATIVE	ASYMPTOMATIC	N/A
47	MALE	40	NEGATIVE	ASYMPTOMATIC	07/03/2021
48	FEMALE	43	NEGATIVE	ASYMPTOMATIC	06/29/21
49	MALE	43	POSITIVE	ASYMPTOMATIC	07/06/2021
50	MALE	55	NEGATIVE	ASYMPTOMATIC	06/24/2021
51	FEMALE	58	NEGATIVE	ASYMPTOMATIC	06/24/2021
TOTAL # of PFIZER VACCINE RECEIVERS	12	TOTAL # OF POSITIVE CASES	2	EFFICACY RATE	83.33%

SINOVAC

PERSON #	Sex at Birth	Age	Test Results	Health Status	VACCINE COMPLETION DATE
52	FEMALE	45	NEGATIVE	ASYMPTOMATIC	N/A
53	FEMALE	51	NEGATIVE	ASYMPTOMATIC	N/A
54	FEMALE	1	NEGATIVE	ASYMPTOMATIC	N/A
55	FEMALE	34	POSITIVE	ASYMPTOMATIC	N/A
56	FEMALE	58	POSITIVE	ASYMPTOMATIC	N/A
57	FEMALE	22	NEGATIVE	ASYMPTOMATIC	N/A
58	FEMALE	22	NEGATIVE	ASYMPTOMATIC	N/A
59	FEMALE	57	NEGATIVE	ASYMPTOMATIC	6/18/2021
60	FEMALE	39	NEGATIVE	ASYMPTOMATIC	9 Jan 2021
61	FEMALE	40	NEGATIVE	ASYMPTOMATIC	6/20/2021
62	FEMALE	38	NEGATIVE	ASYMPTOMATIC	08/27/2021
63	FEMALE	45	NEGATIVE	ASYMPTOMATIC	08/13/2021
64	FEMALE	51	NEGATIVE	ASYMPTOMATIC	08/28/2021
65	FEMALE	44	NEGATIVE	ASYMPTOMATIC	28 Aug 2021
66	FEMALE	1	NEGATIVE	ASYMPTOMATIC	11 Aug 2021
67	FEMALE	57	NEGATIVE	ASYMPTOMATIC	08/20/2021
68	FEMALE	57	NEGATIVE	ASYMPTOMATIC	08/18/21
69	FEMALE	39	NEGATIVE	ASYMPTOMATIC	9 Jan 2021
70	FEMALE	40	NEGATIVE	ASYMPTOMATIC	06/20/21
71	MALE	23	POSITIVE	ASYMPTOMATIC	N/A
72	MALE	57	NEGATIVE	ASYMPTOMATIC	N/A
73	MALE	32	NEGATIVE	ASYMPTOMATIC	N/A
74	MALE	45	NEGATIVE	ASYMPTOMATIC	N/A
75	MALE	48	NEGATIVE	ASYMPTOMATIC	N/A
76	MALE	34	NEGATIVE	ASYMPTOMATIC	6 Jul 2021
77	MALE	40	NEGATIVE	ASYMPTOMATIC	7/24/2021
78	MALE	39	NEGATIVE	ASYMPTOMATIC	7/24/2021
79	MALE	23	POSITIVE	ASYMPTOMATIC	08/23/2021
80	MALE	41	NEGATIVE	ASYMPTOMATIC	1 Aug 2021
81	MALE	41	NEGATIVE	ASYMPTOMATIC	04/13/21
82	MALE	32	NEGATIVE	ASYMPTOMATIC	08/26/2021
83	MALE	32	NEGATIVE	ASYMPTOMATIC	09/30/2021
84	MALE	45	NEGATIVE	ASYMPTOMATIC	03/23/2021
85	MALE	22	NEGATIVE	ASYMPTOMATIC	8 Jan 2021
86	MALE	34	NEGATIVE	ASYMPTOMATIC	6 Jul 2021
87	MALE	40	NEGATIVE	ASYMPTOMATIC	07/24/21
88	MALE	39	NEGATIVE	ASYMPTOMATIC	07/24/21
89	MALE	43	POSITIVE	ASYMPTOMATIC	07/24/2021
90	MALE	28	POSITIVE	ASYMPTOMATIC	07/24/2021
TOTAL # of SINOVAC VACCINE RECEIVERS	39	TOTAL # OF POSITIVE CASES	6	EFFICACY RATE	84.62%
TOTAL # OF VACCINE RECEIVERS	90	TOTAL # OF POSITIVE CASES	14	EFFICACY RATE	84.44%

Appendix 3: Consent letter given to participants

St. Theresa's College, Quezon City
Senior High School
A.Y. 2021-2022

Consent Letter for the Participation in the Research Entitled *"Covid-19 Vaccine Efficacies of Health Care Professionals of a Local Hospital and its Correlation to Vaccine Confidence"*

Research Adviser: Mr. Rhoy Diaz

Dear Participant;

A blessed day to you!

We are Doreen Bautista, Janella Francisco, Princess Salazar, Augustine Sanchez, Felisa Tablante, and Mariah Visaya, all students under 12-STEM B of St. Theresa's College of Quezon City. With the guidance of Mr. Rhoy Diaz, our research adviser in the course Quantitative Research, we are conducting a research entitled **"Covid-19 Vaccine Efficacies of Health Care Professionals of a Local Hospital and its Correlation to Vaccine Confidence"** wherein we aim to assess the efficacy of medical information when delivered to the masses. Additionally, it aims to collect data in order to assess the views of Filipinos ages 16 to 65 regarding their outlooks on the different vaccines, most notably on the brands Pfizer, Oxford-Astrazeneca, and Sinovac, in order to see how different factors can affect vaccine confidence, and how can these be resolved by different sectors of society.

In line with this, we are humbly asking for your participation and consent to use data in this research wherein data collection will be done through the use of Google Forms. As participants, you are protected by the Data Privacy Act of 2012, and in compliance to this, the following measures are implemented to protect your privacy:

4. This data will only be used for the purpose of the research.
5. The data collection will be done from **October 11-23, 2021**. By **November 19, 2021**, all data (e.g. the Google Forms) will be deleted to protect the privacy of the participants.
6. This data will only be shared among the members of the group and to the research adviser. Hence, **others who were able to obtain the data will be dealt accordingly.**

We would very much appreciate your participation in this research with utmost honesty. The survey will only take a few minutes to answer. Below are the procedures of data collection:

5. The participants will access the links to the Google Forms provided by the researchers through the following platforms:
    a. Messenger;
    b. Facebook;
    c. Twitter, and;
    d. Discord.
6. The participants will be reading and answering the consent letter provided.
7. The participants will be asked of their age in order to see the age brackets of the participants.
8. The participants will be asked to read the medical information about COVID-19 vaccine efficacies collected from a local hospital.
9. Lastly, the participants will answer questions through a Likert Scale, wherein the options are *Strongly Disagree, Disagree, Neutral, Agree,* and *Strongly Agree*.

We are hoping that you agree to participate in this research. Should you not wish to participate in this study, we will also respect your decision, though we would like to also ask for your help to also share this survey in order for us to gather more participants as this would gladly help with our research. For inquiries regarding the research, you may contact us directly through directly messaging us from the platforms where you have seen the links to our surveys.

We would like to extend our gratitude for reading this letter. May you stay safe in this pandemic, and God bless.

Respectfully yours,

Members of Group 9 from 12 STEM B

Doreen Bautista

Janella Marvi D. Francisco

Princess Amorie D Salazar

Augustine Nicóle C. Sanchez

Felisa Isabelle P. Tablante

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