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Graduate School of Health Sciences

Master of Science Thesis

NURSES OPINION TOWARD CORONAVIRUS VACCINE AT KIRKUK CITY

Saleh JUMA

Advisor

Asst.Prof.Dr. Yaşar KEMAL YAZGAN

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NURSES OPINION TOWARD CORONAVIRUS VACCINE AT KIRKUK CITY

BY
Saleh GAZEI JUMA JUMA

The Institute of Health Sciences
The Department of Nursing
The Institute of Health Nursing Master Program with Thesis

The Degree of Master's of Science in Nursing

SUPERVISOR
Asst. Prof.Dr. Yaşar Kemal Yazgan

Çankırı 2022

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ETHICS STATEMENT

The thesis entitled “Nurses Opinion Toward Coronavirus Vaccine at Kirkuk City” which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

July 2022

Saleh Gazei Juma Juma

ABSTRACT

NURSES OPINION TOWARD CORONAVIRUS VACCINE AT KIRKUK CITY

Saleh GAZEI JUMA JUMA

Master of Science in Nursing

Advisor: Asst. Prof. Dr. Yaşar KEMAL YAZGAN

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July 2022

Saleh Gazei Juma Juma**.** Nurses Opinion Toward Coronavirus Vaccine at Kirkuk City Çankırı, 2022.

Background: Vaccines are the only way to stop the virus from spreading, no matter how hard people try to stop it. Some people, on the other hand, are very against being vaccinated. Those who are afraid of getting a vaccine can put off or not get the COVID-19 vaccine.

Objective: This study aims to assess nurses opinion toward coronavirus vaccine at the Kirkuk city. It also attempts to find out the association between nurse opinions on coronavirus vaccines and their demographic characteristics.

Methods: Descriptive cross-sectional study design was carried out in Kirkuk, Iraq, from November 2021 to April 2022. The study was conducted using a non-probability (purposive) sample of 200 nurses out of 850 nurses working in Kirkuk General Hospital. The items included in the questionnaire numbered 22. The average time for data collection was 20 minutes. The analysis of data was completed in the study with SPSS version 22.

Results: The socio-demographic characteristics of the entire study sample are shown. The result shows nursing staff opinion on coronavirus vaccine and a high significance and moderate significance. There were significant differences between nursing staff opinion on coronavirus vaccine.

Conclusion: Only a few nurses have a bad attitude about the coronavirus vaccine. The majority of nurses have a good attitude about the vaccine.

Key Words: Nurses opinion, Coronavirus, Vaccine, Kirkuk city.

ÖZET

HEMŞIRELERIN KERKÜK KENTINDE KORONA VIRÜS AŞISINA YÖNELIK GÖRÜŞLERI

İsim SOYİSİM

Hemşirelik, Yüksek Lisans

Tez Danışmanı: Dr.Öğr.Üyesi Yaşar KEMAL YAZGAN

Eş Danışman: Dr.Öğr.Üyesi Abid SALIH KUMAIT

Temmuz 2022

JUMA, Saleh Gazei Juma**. Hemşirelerin Kerkük Kentinde Corona Virüs Aşısına Yönelik Görüşleri**, Yüksek Lisans, Çankırı, 2022

Arka plan: İnsanlar ne kadar durdurmaya çalışırsa çalışsın, aşılar virüsün yayılmasını durdurmanın tek yoludur. Öte yandan bazı insanlar aşılanmaya çok karşıdır. Aşı olmaktan korkanlar COVID-19 aşısını erteleyebilir veya yaptırmayabilir.

Amaç: Bu çalışma Kerkük şehrinde hemşirelerin coronavirüs aşısına yönelik görüşlerini değerlendirmeyi amaçlamaktadır. Ayrıca Kerkük kentindeki koronavirüs aşılarına ilişkin hemşire görüşleri ile demografik özellikleri arasındaki ilişkiyi bulmaya çalışılıyor.

Yöntemler: Tanımlayıcı kesitsel araştırma deseni, Kasım 2021 ile Nisan 2022 tarihleri arasında Irak'ın Kerkük kentinde gerçekleştirilmiştir. Çalışma Kerkük Genel Hastanesi'nde çalışan 850 hemşireden 200'ü olasılık dışı (amaçlı) örneklem kullanılarak gerçekleştirilmiştir. 22 numaralı ankette yer alan maddeler. Veri toplama süresi ortalama 20 dakikadır. Çalışmada verilerin analizi SPSS versiyon 22 ile tamamlanmıştır.

Bulgular: Tüm çalışma örneğinin sosyo-demografik özellikleri gösterilmektedir. Sonuç, hemşirelik personelinin koronavirüs aşısı hakkındaki görüşünü ve yüksek önem ve orta derecede anlamlı olduğunu göstermektedir. Hemşirelik personelinin koronavirüs aşısı hakkındaki görüşleri arasında önemli farklılıklar vardı.

Sonuç: Sadece birkaç hemşirenin koronavirüs aşısı hakkında kötü bir tutumu var. Hemşirelerin çoğunluğunun aşı konusunda iyi bir tutumu vardır.

Anahtar Kelimeler: Hemşire görüşü, Corona virüs, Aşı, Kerkük şehri.

PREFACE AND ACKNOWLEDGEMENTS

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Finally, I would like to thank everyone I forgot who helped me with this study even with a wonderful simple word, and to all people who made this work possible.

Saleh GAZEI JUMA JUMA

Çankırı-2022

TABLE OF CONTENTS

Page

ABBREVIATIONS AND SYMBOLS

Items	Meaning
COVID-19	Coronavirus
SARS COV-2	Severe acute respiratory syndrome coronavirus-2
WHO	World health organization
ARDS	Acute respiratory distress syndrome
SARS	Severe acute respiratory syndrome
VAED	Vaccine associated enhanced disease
IED	Immune-related enhanced disease
VAERD	Vaccine associated enhanced respiratory disease
ADE	Antibody dependent enhancement
RCTs	Randomized controlled trials
RNA	Ribonucleic acid
COVs	Coronaviruses
MERS	Middle east respiratory syndrome
RWE	Real-world vaccine effectiveness
mRNA	Messenger ribonucleic acid
CEPI	Coalition for epidemic preparedness innovations
DNA	Deoxyribonucleic acid
ORFs	Open reading frames
MERS COV	Middle east respiratory syndrome coronavirus
PP	Poly proteins
M	Membrane
NSPs	Nonstructural proteins
S	Spike
ACE2	Angiotensin converting enzyme
E	Envelope
N	Nucleocapsid
RBD	Receptor binding domain
VPDs	Vaccine preventable diseases

HCP	Health care personnel
BCG	Bacillus Calmette–Guérin
HCWs	Health Care Workers
CCU	Cardiac care unit
MOS	Mean of score
NS	Not significant
HS	High significant
MS	Moderate significant
LS	Low significant
INS	Iraqi Nursing Syndicate
SPSS	Statistical Package for Social Science Program
ANOVA	Analysis of Variance
S	Significant
MSF	Medecins Sans Frontieres
OPD	Outpatient department
NCD	Non communicable disease
ER	Emergency
KPC	Knowledge Practice and Coverage
OSM	Ortadoğu Sağlık Merkezi

List of Symbols

Symbols	Meaning
F	Frequency
≤	Less-than or equal to
=	Equal to
%	Percentage
≥	Greater-than or equal to

LIST OF TABLES

Page

LIST OF FIGURES

Page

1. INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-COV-2) is the virus that causes the severe acute respiratory syndrome (SARS). It was found in Wuhan, China, on December 31st, 2019. It is now being investigated. Virus experts think this is the second strain of the virus that they have found. There were more than 200,000 deaths because of this disease around the world, according to official statistics from the government. A lot of people have become sick because of the coronavirus outbreak. Coronavirus pandemic: In 2019, because they had been exposed to the virus, people became sick. The number of people who got sick in 2019 rose. Not every country has COVID-19, but that doesn't mean there can't be an outbreak in any of them (B. S. Graham, 2020).

Figure 0.1 Portrait of a young masked nurse.

In the United States people are different from one another. People who have severe acute respiratory syndrome have a lot of problems with their lungs. It can be very bad for people who have the virus to get acute respiratory distress syndrome (ARDS). Coronavirus-2 is a virus that can do this to people who are vulnerable. A vaccine must be made to prevent getting COVID-19, so we must do this (Lee. L. A., Franzel, L., 2013).

The WHO (world health organization) says that there are more than 200 vaccines for COVID-19 being made all over the world right now. For the world health organization, there is a good chance that one of them will work out for the world health organization (WHO). You need to be careful when COVID-19 is found in people (Iwasaki, A., 2020).

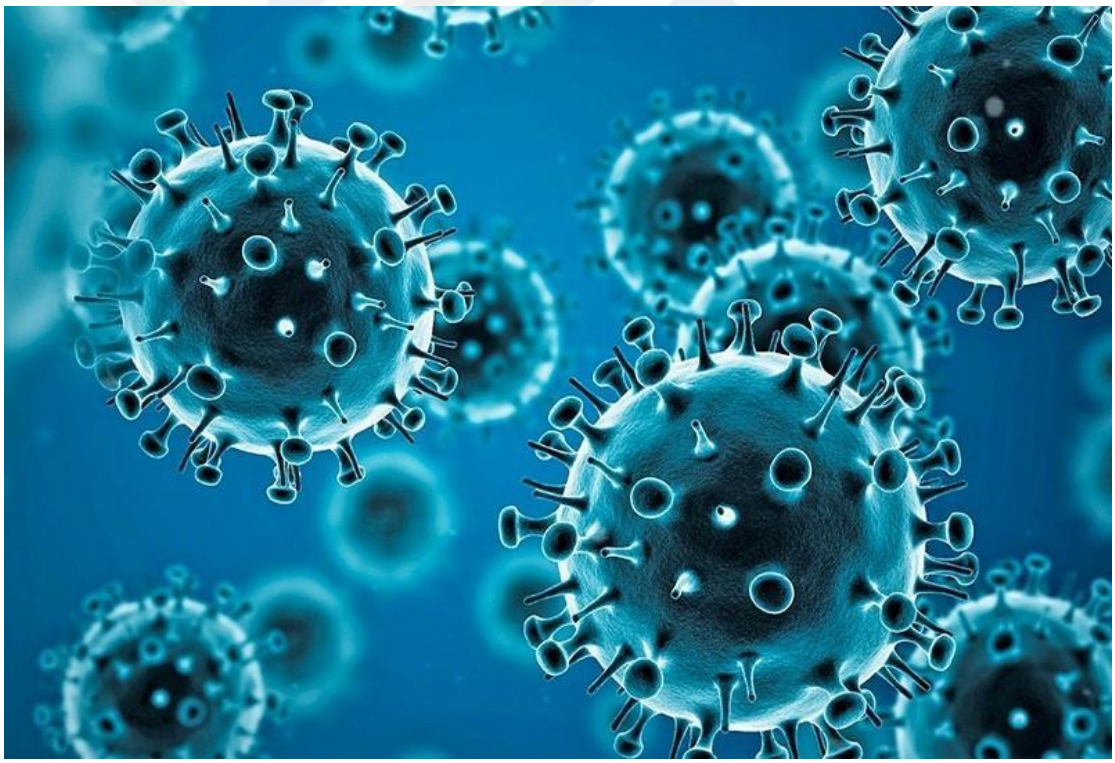

Figure 0.2 Coronavirus-2.

Vaccines should be given to people before they get sick, based on how well they have worked to stop other diseases from getting worse. Vaccines for diseases like hepatitis B and C are expected to save more than 23 million lives between 2011 and 2020 because

they can help people who have them. First, the risks and benefits of immunization must be found, weighed, and compared to each other. Before any vaccine can be made, this must be done. Some people thought this vaccine might make them more likely to get severe acute respiratory syndrome coronavirus-2 (SARS-COV-2). The only way to overcome this disease is by vaccinations. In our study, we found COVID-19 vaccines may make people likely get sick. (Hotez, P.J., 2020).

It happens when a person's immune system has already fought off a disease in the past. This is called immune-related enhanced disease (IED). In terms of criticism, this is what we are going to discuss. Whenever your body reacts to a vaccine in a way that makes you more likely to get sick, this is called vaccine-associated enhanced disease (VAED) (Bournazos, S., 2020).

As for secondary infections caused by people getting a vaccine that has never been given before and that hasn’t always been thought to be the case. In the past, it was thought that using these antibodies in conjunction with antibody-dependent disease enhancement was a good idea for antibody-dependent enhancement (ADE). It was found in three-year-old bodies (Lambert, P. H., 2020).

Figure 0.3 Breakthrough severe acute respiratory syndrome coronavirus -2 infection peaks at 5 months.

In addition, people are more likely to get a coronavirus disease in 2019 if they are old or already have health problems. People can be protected from COVID-19 both directly (when people in high-risk groups get vaccinated) and indirectly (when people who are not in high-risk groups get vaccinated) through people who come into close contact with them (Matrajt, L., 2020).

It was critical to have the flu vaccine as quickly as possible to protect the greatest number of individuals possible. There were a lot of older people who were the first to get the vaccine. Since then, significant further efforts have been made to protect those who are not in imminent danger. Because influenza vaccines are less effective in the elderly than in younger people, it may be preferable to improve their indirect protection. As of the present, it is difficult to determine whether COVID-19 vaccinations are identical. It is being used as part of the COVID-19 project to look at different vaccine approaches, understanding that vaccine doses may be limited at first and that vaccinations should be administered with caution (Bubar, K. M., 2021).

Age-based mathematical models use touch patterns that are close to what people actually do. There are some models that can be used to do an indirect protection strategy if there are enough vaccines. They will have to think about how and how well these vaccines work and who is exposed to them in the first place, though. Vaccines for COVID-19 are based on a lot of data. Figuring out the best way to get and use this information is necessary. Phase 3 immunization trials look at how well and how safe each person is getting a vaccine. It is common for regulators to use biologically validated and symptomatic sickness as a way to record the direct benefits of immunization when they make decisions. This is how they keep track of how much money they make (Krause, P., 2020).

Figure 0.4 COVID-19 vaccine.

There are a number of other objectives for the study, such as determining how well an immunization function in diverse groups of people. There will still be a lot of discussions about the COVID-19 vaccine after the research is done, but that will not happen for a while. When someone is at risk, many things can affect how well a vaccine helps them (Chua, H., 2020).

Clinical studies are often too small to prove that an immunization protects specific groups. Second, can vaccines stop or slow the spread of disease? It is important to think of protecting others who are not there. Research can help dealing with these efforts. In the beginning randomized controlled trials (RCTs) can show how well a drug works for different groups of people (Yang, J., 2020).

It seems it is not easy to say how well the treatment works for people who are at risk. If high-risk people are more careful and do not get sick as often, this will make this more likely. It could also go up if they don't get sick, which would make the drug less effective. Vaccines are the only way to prevent disease that has been proven to work over time. Vaccines against coronavirus disease have been shown to be effective in the past and in ongoing clinical trials (COVID-19). Vaccination against contagious, new, and deadly diseases was once very effective. The spanish flu of 1918 is one of the best examples of a flu outbreak you can think of (Al-Qerem, W. A., 2021).

With a vaccine that works 70% to 95% of the time, it is possible to get a shot against COVID-19 for protection. Everyone can now relax, because these technologies are more common now. Despite the fact that many vaccine candidates for COVID-19 have been developed over time, the virus incidence and mutation rate keep rising around the world (Caserotti, M., 2021).

Vaccines are the only way to stop the virus from spreading, no matter how hard people try to stop it. Some people, on the other hand, are very against being vaccinated. Those who are afraid of getting a vaccine can put off or not get the COVID-19 vaccine (Iyengar, K. P., 2021).

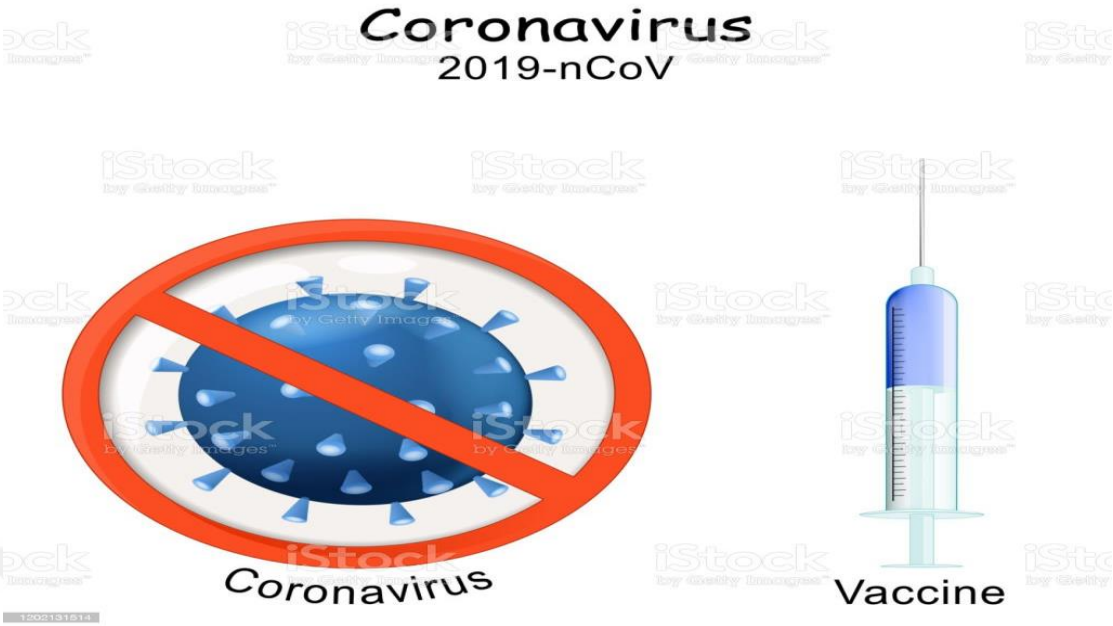

Figure 0.5 Vaccination.

Vaccination skepticism has no geographic, ethnic, or religious boundaries. It does not matter where you live or what you believe. Every country has a lot of it. The speed at which COVID-19 research was done is also important. Vaccination aversion is still a big problem in the fight against COVID-19 (Puri, N., 2020).

Yet, some people do not like getting the COVID-19 vaccine, which is for people in parts of the middle east, africa and europe. As the fight against COVID-19 goes on, this could be a big problem. In addition, a lot of greeks cannot get COVID-19 vaccines now, which shows how important it is for public health officials to start spreading the word early (McAteer, J., 2020).

Is it still possible to achieve a global vaccination goal with a lot of vaccine candidates available to the public? There are many reasons why people are afraid of vaccines, and the negative effects they have on achieving global herd immunity across cultures are looked at. There also have been a lot of big changes in the study of vaccine fear (Kourlaba, G., 2021).

As part of the vaccine process, patients are exposed to antigens and make immunological memories in their bodies. This helps them build long-term immunity before they are exposed to live diseases. It is possible to build up your immune system if you make antibodies on your skin and get T-cells going. In order for the SARS-COV-2 virus to spread, it needs a spike of glycoprotein on the surface of the virus (S). Angiotensin converting enzyme is found on the surface of lung epithelial cells because there is a lot of severe acute respiratory syndrome in the air. This means that coronavirus-2 can get into host cells (Wrapp, D., 2020).

Vaccines that protect against the COVID-19 S strain are already on the market, and more are on the way. When it comes to its structure, the SARS-COV-2 S is a lot like the SARS-COV-1 S, which is what researchers are studying most. It has a lot in common with the SARS-CoV-1 S in terms of how it looks. An immunization process that has a lot of oral and cell-based immunogenicity may help protect against SARS-CoV-2 infection (Letko, M., 2020).

Protein structural epitopes have been used to make oral protection for humans. Antibodies against the virus' core nucleoprotein and S protein are usually made when someone is infected with this virus. Any vaccine candidate for SARS-CoV-2 should try to build long-term humoral immunity with protective antibody titers. When anti-pathogen antibodies or cross-reactive antibodies attack cells instead of protecting the host, pathology gets worse (To, K. K. W., Tsang, O. T. Y., 2020).

Macrophages were infected with Antibody dependent enhancement (ADE), which led to deadly pneumococcal pneumonia in mice. Both of these things were bad for SARS-CoV-1 growth in 2002 and 2003. Because of this, SARS COV-2 may slow down the development of a vaccine (Tetro, J. A., 2020).

In order for vaccine-induced immunity to work against intracellular pathogens and for quick re-infection after vaccination, mobile immunogenicity is needed. Interleukins 10 and 14 can make an acute SARS-COV-2 infection worse if people have them (IL-10 and IL-14). These interleukins limit the response of CD8+ T-cells and may cause more

severe damage. As a result, vaccines for SARS-CoV-2 which does not make the body make too many T cells (Th2) and are thought to be the most effective. Adjuvants help to boost immunity and keep people healthy by triggering the body's own defenses. Using an adjuvant that does not favor a Th1 or Th2 response helps to avoid Antibody dependent enhancement (ADE) (Huang, C., 2020).

1.1. Definition

The COVID-19 vaccine is meant to protect people from getting sick from coronaviruses and having a severe respiratory illness caused by the virus. The virus that causes coronavirus illness and SARS is coronavirus-2. Coronavirus-2 has been associated with the coronavirus responsible for SARS and other disorders (COVID-19).

COVID-19 is a highly infectious respiratory infection caused by the coronavirus-2 virus. It can cause a variety of problems. Coronavirus type 2 is a virus that is one of the COVID-19 class's subcategories and is a cause of severe acute respiratory syndrome (SARS COV-2). It was discovered on December 1 in Wuhan, China, and soon spread over the world.

1.2. Importance of the study

Coronavirus disease 2019 (COVID-19) is an RNA virus that spreads in 2019 as a crown when it is seen through an electron microscope because it has spikes on its envelope (World Health Organization., 2020).

SARS is caused by Coronaviruses (COVs). In November 2019, in the Chinese region of Guangdong, the coronavirus began to spread. The Middle East respiratory syndrome first appeared in the United States in September 2012. Coronavirus began to spread in the United States, and soon it was everywhere. This isn't the first time a coronavirus has caused a lot of sickness in people (Fan, G., 2020).

There are four types of COVs, which are called coronaviruses: alpha COV, beta COV, Delta COV and gamma COV. They are found mostly in bats and rats, and (IV) gamma COV is found mostly in humans. COVs are divided into four groups: alpha COV, beta COV, Delta COV and gamma COV (gamma COV). Vaccines could make a big difference when it comes to protecting the population, preventing diseases, and easing the current health crisis (Richard, A., 2021).

More global efforts make and test a vaccine against severe acute respiratory syndrome coronavirus-2 (SARS COV-2), which is a new and very dangerous virus. A number of vaccines will be tested in 2020. At the moment, 48 vaccines are going through clinical trials. Many of these have been shown to be safe and immunogenic, and eleven of them are now being tested in phase 3 clinical trials (Ramasamy M, 2018).

1.3. Problem statement

A coronavirus vaccine is a common problem, a coronavirus vaccine for nurses is similar to receiving a flu injection in many ways. Nurses are frequently infected with the coronavirus. Everyone in the health-care industry must be highly qualified, have extensive knowledge of coronavirus control, and be instructed in how to prevent the virus from spreading. The purpose of this research was to investigate the nurses' opinion on coronavirus vaccines to prevent coronavirus from spreading.

1.4. Objective of the study

This study aims:

1. To assess nurses opinion toward coronavirus vaccine at the Kirkuk city.
2. To find out association between nurse opinion on coronavirus vaccine at the Kirkuk city and their demographic characteristics.

1.5. Research question

What is the nurse’s opinion toward the coronavirus vaccine at Kirkuk city?

1.6. Hypothesis

There is no correlation between nurses' knowledge of the COVID 19 vaccine in hospitals and their demographic characteristics.

1.7. Limitations of the study

This study is limited by the:

- Difficulty in moving to collect information from nurses in light of the spread of the virus.
- Difficulty of obtaining ordinary people who are not infected with the virus in order to obtain information from it.
- Difficulty persuading some clients, especially the elderly, to conduct a sample and take information related to the thesis. In December 2019, China, since then, the disease has spread throughout the world, causing a pandemic.

2. GENERAL INFORMATION

2.1. Background

There was no vaccine that could fight off an infectious disease until COVID-19 hit the market in 1999. Until then, people did not know what it was. They did not get vaccinated against coronavirus before COVID 19 and did not want to because they thought it was unsafe. Birds' infectious bronchitis virus is one of the viruses in this group. The canine coronavirus and cat coronavirus, which both affect dogs and cats, are in this group, too (as of 2003) (Gates, B., 2020).

SARS and middle east respiratory syndrome are not caused by the same virus. They are caused by two different viruses that are not the same. They are known as coronaviruses. Some coronavirus vaccines have been very hard to get in the last few years, so they might not be obtainable (MERS). They have been used to test vaccines against SARS and MERS on people who are not real people. They have made things up. The SARS virus got a lot better in 2005 and 2006. There were new vaccines and treatments for it then (Mehta, N. S., 2020).

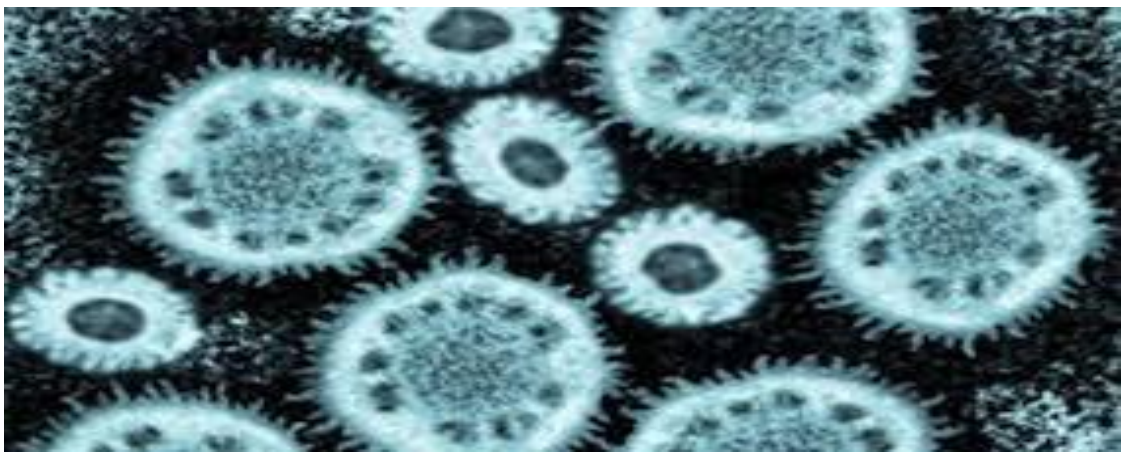

Figure 2.1 Middle east respiratory syndrome.

As of right now, there is not a vaccine for the MERS, but one is on its way. When severe acute respiratory syndrome (SARS) spreads, some think that research from

SARS could be used to make vaccines and other treatments for Middle East respiratory syndrome coronavirus infections, which would help people get better. This was not true. Adenoviral vaccines (ChAdOx1 and BVRS-GamVac) and vector vaccines (ChAdOx1 and BVRS-GamVac) are now being made for people who have Middle Eastern respiratory syndrome (MERS) (Modjarrad, K., 2019).

An egg-made virus may not be ready to be sold for a while. Years before COVID-19, they could show that mice could quickly make mRNA, which is what COVID-19 is about. First, mRNA vaccines were tried on people in 2015 for the first time. They worked well. The same method was used as when ebola vaccines worked to make vaccines for COVID-19 (Sharma, O., 2020).

To find out how well the vaccine works in the real world, case-control and observational studies are being done to see how well it works. There are a lot of vaccines for COVID-19 that are approved for real-world vaccine effectiveness (RWE). When vaccines against SARS-CoV-2 mRNA were first made, they were looked at to see how well they worked over time (Turner, J. S., 2021).

2.2. Historical

Samples of the COVID-19 vaccine are kept in a freezer at the national institute of allergy and infectious diseases, where they are being used for research. They can look at them and learn more about the vaccine, such as how it works, by doing this. It will happen on the following dates 2020, January 30. In the past, it was found that some people had been infected with a virus called severe acute respiratory syndrome coronavirus 2. Coronavirus 2 is the virus that causes SARS. When COVID-19 was caused by this virus, COVID-19 was also caused by this virus, coronavirus 2 when COVID-19 was caused by coronavirus 2, it changed its name to severe acute respiratory syndrome coronavirus 2. This happened after the start of the dog year on January 11, so it happened after then. Believe it did at the time (Le, T. T., Cramer, J. P., 2020).

Figure 2.2 Patient with COVID-19 - clinical advisor.

COVID-19's genetic code was decoded at that time, too. COVID-19 is a virus that can cause a lot of problems. This means that the vaccine was made quickly as part of a world response in the event that COVID-19 came back. As of 2020, people from all over the world were working together to make vaccines, which was a big step. It is because they worked so well together that this result can be blamed on that. They have agreed to work on a number of vaccine ideas before the end of fiscal year 2020 (Yamey, G., Schäferhoff, M., 2020).

They also intend to develop plans for global immunization. During COVID 19, a group called the coalition for epidemic preparedness innovations (CEPI) said that the United States makes more than 40% of vaccines. Almost three-quarters of projects are in Asia and Australia, the rest are in Europe and only a few are in South America and Africa, where there are not many businesses. That's a lot of work (Valckx, s., 2020).

In South America and Africa, very few projects are bigger than this one. SARS COV-2 vaccine will not be available in less than 18 months, according to people who work for the world health organization. It will be too late to get a vaccine in February that year,

the world health organization (WHO) does not do that. Virologist Paul off says it is important to come up with safe and effective vaccines that can be made in less than a year, so that people can get them (Tétrault-Farber, G., 2021).

When people started getting immunized more often in the second half of the 20th century, some vaccine preventable diseases (VPDs) were eliminated or controlled (Van Panhuis, W. G., 2013).

Vaccine preventable diseases (VPD) epidemics, on the other hand, keep happening even in countries that have been immunized for a long time. Large measles epidemics have happened in the European Union over the last decade, with 33 deaths reported in 2018. There were also 620 cases of rubella and 3,813 cases of hepatitis A between June 2016 and December 2017 (Maltezou, H. C., Botelho-Nevers, E., 2019).

Vaccine preventable diseases (VPD) outbreaks in hospitals can be very dangerous and costly, causing a lot of sickness and death. People who work in health care are at risk of getting VPD from their job. They can also pass vaccine preventable diseases (VPD) on to patients who have illnesses or are old, which puts them at risk of major complications or even death. Vaccinating healthcare workers is a good idea because it will protect both them and their patients (Maltezou, H. C., & Poland, G. A., 2016).

We did a survey of 30 European countries in 2011 and found that all of them had national immunization plans for health care personnel (HCP). However, there were big differences between countries when it came to the number of vaccines, the groups of health care personnel (HCPs) they were supposed to target, and the way they were implemented. We show the results of a survey that took place in 2018 to look at how national immunization programs for health care professionals have changed since 2011. The same process as before was used. We added the new meningococcal group B, pneumococcal, and human papillomavirus vaccines to our list of vaccines because these vaccines are recommended for healthcare workers in some countries, like the United States (Maltezou, H. C., Wicker, S., 2011).

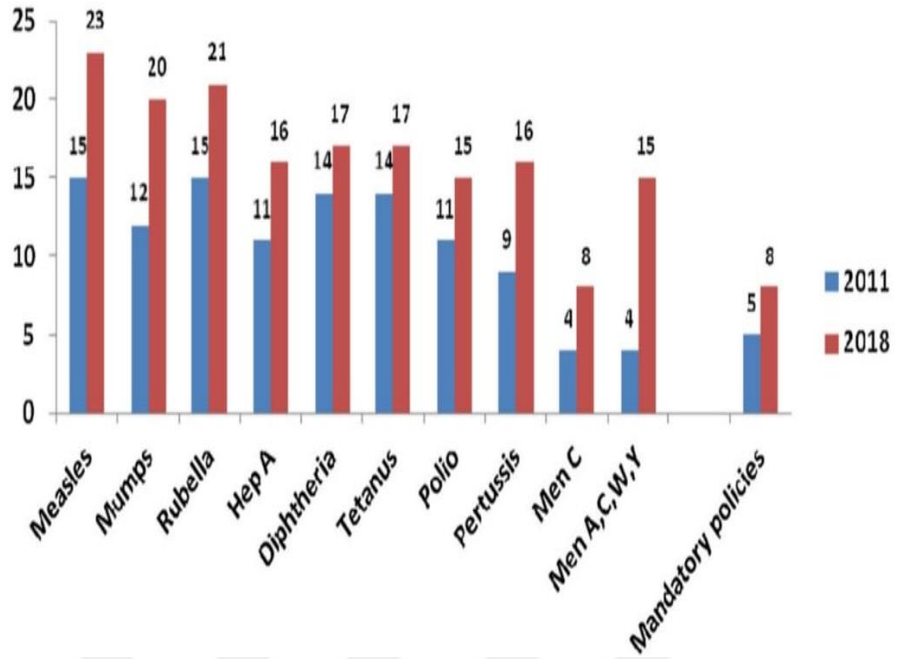

Figure 2.3 Vaccination policies for healthcare personnel (HCP) in europe in 2011 compared to 2018.

We looked into the vaccination policies of 36 European countries for health care workers. Protocols for immunizing health care providers are in place in every country. It's still very different between countries when it comes to immunizations, target health care personnel (HCP) groups or health care settings, and the regulatory framework for implementing them. They may be partly because there aren't more detailed guidelines on how to protect workers in the healthcare field from exposure to biological agents and sharp injuries, as well as how to improve influenza vaccines (European Commission, 2018).

World health organization, on the other hand, has made recommendations to help countries make national immunization plans for health care personnel (HCP) against tuberculosis (BCG vaccine), hepatitis B, diphtheria, measles, rubella, meningococcal, influenza, varicella, and pertussis (World Health Organization, 2017).

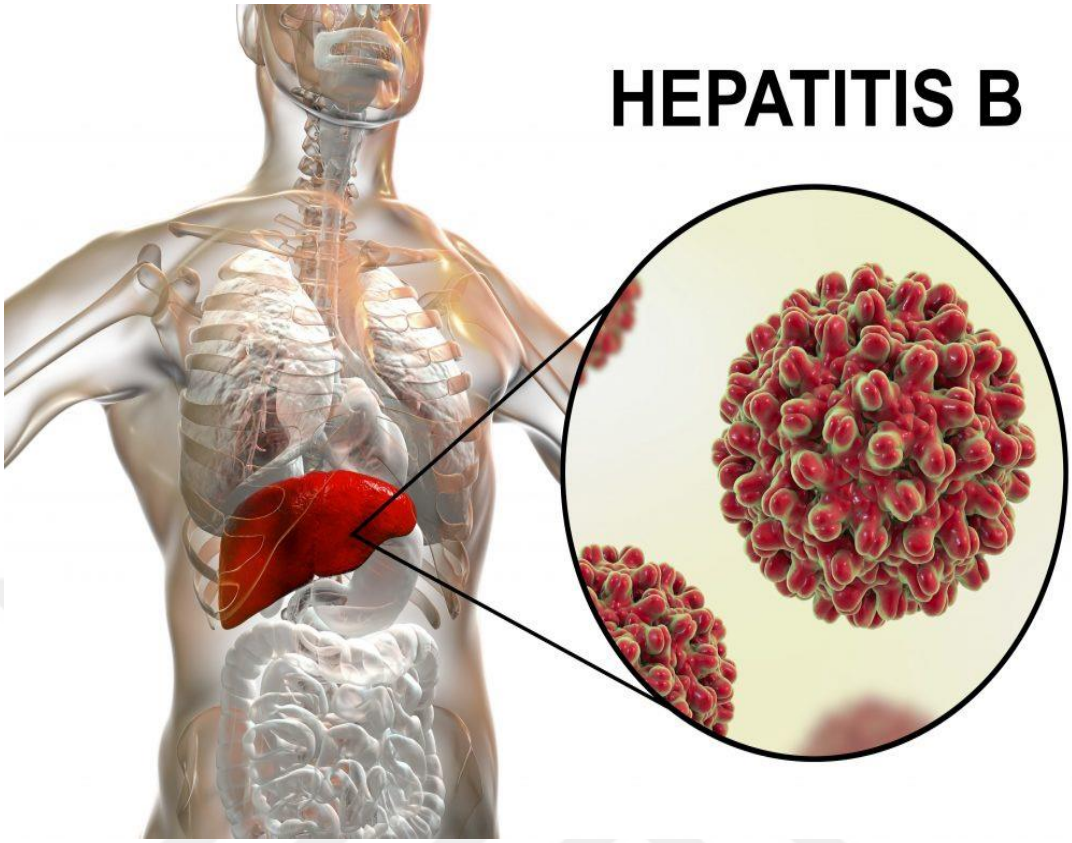

Figure 2.4 Hepatitis B.

These vaccines protect against these diseases. According to experts from the European technical advisory group of experts, health care personnel (HCP) vaccines should be given to people who work with vaccines. A health care provider's vaccination policy might be affected by things like the prevalence of VPDs, vaccination programs, the general population's vaccination rates, no ncompliance with laws, penalties, and costs. An immunization program in a country may be slowed down by a lack of licensed vaccines. We saw a lot of big changes in the vaccination programs for people who work with people (Maltezou, H. C., Botelho-Nevers, E., 2019).

There was a lot more coverage in the 2018 vaccination policy than in the 2011 survey, and the policy had been made even stronger. This is because more countries have laws or policies in place to protect health care workers from diseases like measles and mumps. They also protect them from diseases like hepatitis A, poliomyelitis and meningitis. This could be because more people are aware of how easy it is to get VPDs at work because of recent outbreaks of measles, rubella, pertussis, and hepatitis A, as

well as because healthcare facilities have become better at controlling infections over the last decade, especially after the 2009 influenza H1N1 pandemic. The recent migration of a lot of refugees may have an effect (Eichner, M., & Brockmann, S. O., 2013).

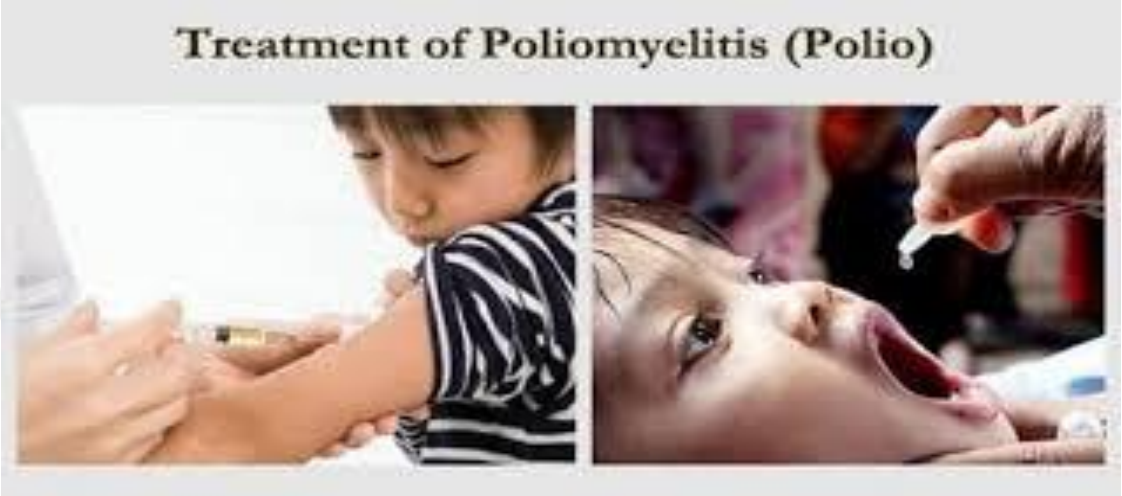

Figure 2.5 poliomyelitis vaccine.

Some European countries have no national policies in place for HCP to be vaccinated against measles, mumps, and rubella, tetanus, and diphtheria. One-quarter of european countries have no national policies in place for health care personnel (HCP) to be vaccinated against measles, one-third have no national policies for mumps and rubella, tetanus, and diphtheria, and roughly half have no national policies for pertussis, poliomyelitis, or varicella (Sane, J., 2016).

Figure 2.6 Measles, mumps, and rubella vaccine.

People in many countries might get vaccinated as part of their general health care. However, there are some vaccine-preventable diseases (VPDs) that need extra doses. Also, young health care professionals (HCP) may move to a new country in search of work. It is very important for the hosting health systems to make sure that HCPs aren't infected with VPDs (Pavli, A., 2017).

Health care personnel (HCP) influenza and hepatitis B vaccines are almost always given in Europe. For more than 30 years, both vaccines have been recommended. They're at the heart of health care personnel (HCP) immunization campaigns all over the world. Meningococcal disease is a possible risk for laboratory workers. In a study of 16 meningococcal illnesses that were thought to have been caused by bacteria in the lab, the incidence for microbiologists was 13/100,000 compared to 0.2/100,000 in the general adult population (Bo, M, & Zotti, C. M., 2016).

However, 19 of the 36 countries that took part in the study didn't have plans in place to protect lab workers from meningococcal disease. Most countries don't have rules in

place to make sure that lab workers get the BCG vaccine, even though tuberculosis is an occupational risk for people who handle clinical samples that might be infected. Some people may be worried about the bacillus calmette–guérin) BCG)vaccine's limited effectiveness after birth, as well as the fact that there isn't a vaccine approved in some countries (Boulanger, R. F., 2016).

Figure 2.7 Bacillus calmette–guérin BCG vaccine.

In some countries, professional societies or hospitals have made rules that could work together. HCP protection and patient safety are also regulated at the local level in Sweden. This is in addition to the national policies on influenza and diphtheria immunization that are in place there. Depending on the risk assessment, each employer or health care facility recommends and implements immunizations for HCP against different VPDs (Paterson, P., 2016).

Figure 2.8 Health care personnel.

There are vaccination programs in 13 countries in Europe that require people to get certain vaccines. In most cases, an HCP who doesn't get a required vaccine will be moved to a low-risk job. Forced vaccination laws in Europe aren't set in stone, but there aren't any rules for doctors who don't want to be vaccinated in five countries with mandatory vaccination policies (Verger, P., 2016).

In total, three more European countries made HCP immunization compulsory in 2018 than they did in 2011. Europe is likely to see more forced vaccination policies because of the rise in vaccine reluctance in the general population as well as the growing risks of vaccine reluctance among HCP. Only 26 countries in Europe give HCPs free vaccines. Four countries have a clear link between mandated and free vaccines. Our study has almost all of the European countries on the continent of Europe taking part in it. We used the same method we used before (Levy-Bruhl, D., 2018).

To do our survey, which let us see how HCP immunization programs in Europe have changed over the last decade. The meanings of "recommended" and "required" may

vary from country to country, which could be a problem. Participants helped us make sure that these definitions were used consistently and that the data we collected was only for healthcare professionals, not everyone else (Larson, H., 2018).

We also didn't look for differences (if any) between public and private health care facilities. Europe has a lot of different rules about immunization for health care providers in 2018. More countries have made it mandatory for health care workers to get vaccinated. This is a big change from 2011. However, there are still some gaps in Europe's HCP vaccination policy. Many countries don't have national policies for HCP vaccination against measles, rubella, mumps, pertussis, or meningococcal disease, so they don't have to (Dubé, E., 2017).

It doesn't matter what level you are at, national vaccination policies for health care workers should be re-evaluated in light of current VPD epidemiological trends and the documented risk and potential for exposure or transmission in Europe's health care facilities. Vaccines that are still in development, like ones that could protect against more illnesses or new infections, could be part of a future HCP immunization policy. Priority should be given to vaccination strategies against VPDs that have been shown to cause a lot of sickness and death. It will be easier for healthcare professionals (HCP) to learn about vaccine policies if there is a consensus-based policy in Europe. This will make it easier to strengthen current vaccination programs for HCP and make healthcare facilities safer for both workers and patients (Gagneux-Brunon, A., 2018).

2.3. Coronavirus biology and its implication on vaccine development

RNA viruses called coronavirus can be found all over the world, and they can make people sick. Their size is small because they live inside a cell. It ranges from about 80 to 160 NM. "Crowns" are what they are called for because of how they look when they are looked at through an electron microscope (Enjuanes, L. S. C. J. J. I. J., 2016).

A virus made entirely of RNA has the largest genome of any virus that has been found so far. This chemical structure has no virus DNA in it at all. In a new study published in

science, people have antibodies that keep coming back to the S protein. They have survived severe acute respiratory syndrome and have antibodies that look a lot like these (SARS). A lot of studies show that anti-S antibodies can help keep both SARS and MERS from hurting animals and people, as well as keep them healthy. In addition, they can keep kids from getting sick in the first place. A lot more is being learned about how vaccines based on S proteins protect against SARS and MERS-COV in animals before they can be used in human's work better. coronavirus (COV) S is a very good vaccine, and now we have even more proof. The goal is to make antibodies that can kill germs and keep people from getting sick as a result of their work (Tang, X. C., 2014).

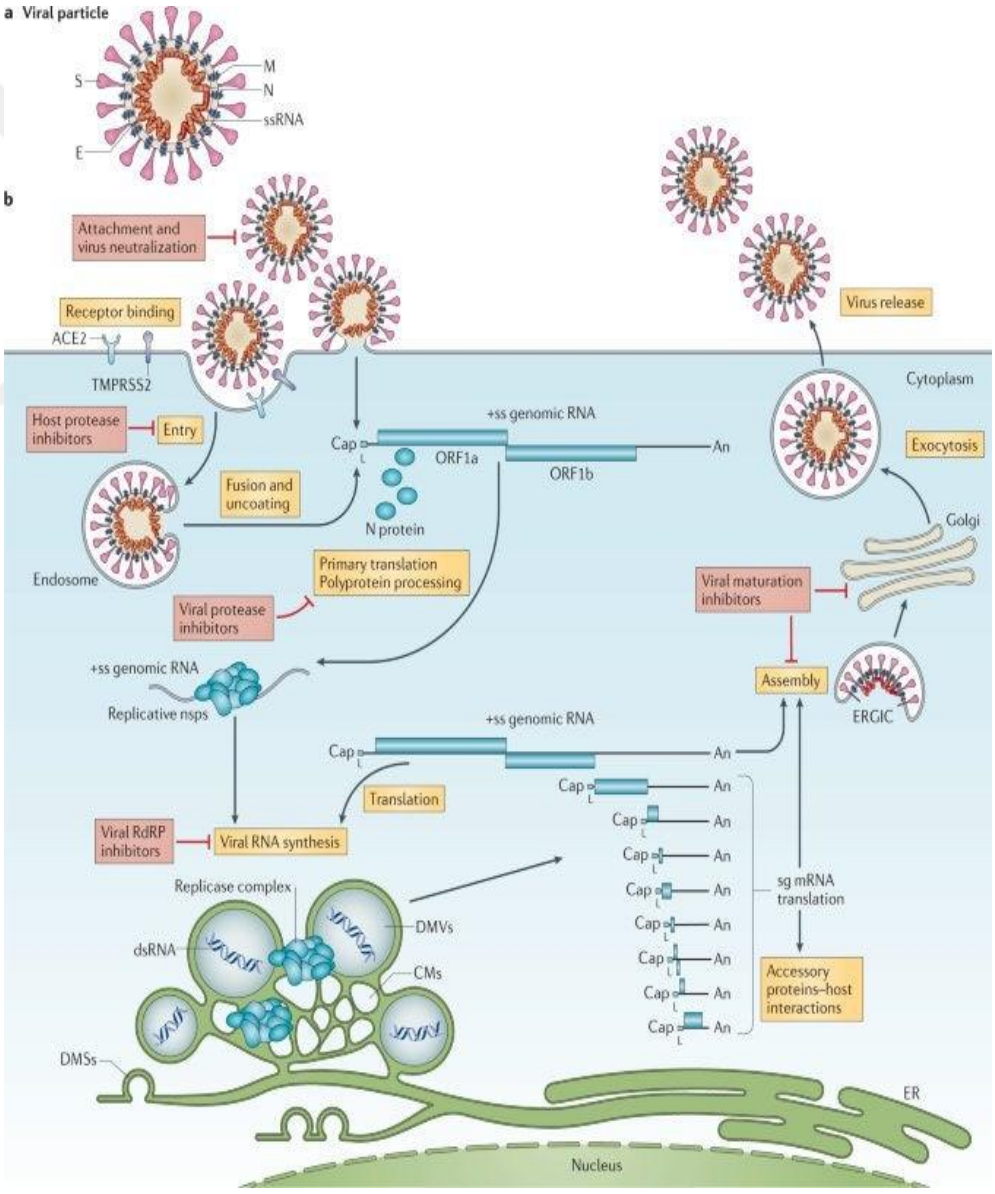

Figure 2.9 Brainstorming viral RNA synthesis.

They have thought about vaccine targets for other structural proteins like the S protein. They have not tried them yet. N protein-based vaccines may not make antibodies that can fight off the virus because the coronavirus (COV) doe not have the N protein on its surface, so they are not very likely to make antibodies (Tai, W., 2016).

Coronavirus (COV) species have a lot more of the N protein than the S protein, but not as many of them. This suggests that a vaccine that can make T cells more active could be made because the N protein is more common. In the virus, there is a protein called N. It can be used to make vaccines against both the severe acute respiratory syndrome coronavirus and the Middle East respiratory illness coronavirus. Future vaccines made from virus N protein could also be used to make vaccines for COV T-cells, but this is still in the works (Zhao, J., 2016).

People who give their pets M protein-based immunization are more likely to have antibodies in their blood after that. On the other hand, a vaccination with the M protein does not make antibodies that can fight off disease or keep you from getting it in the first place (Iwata-Yoshikawa, N., 2014).

People have done research on this in the past, and it has been proven to be true. When it comes to the protein-based coronavirus (COV) E vaccines, there is one more thing you should know. Every single one of them has not worked for anyone, and none of them have led to neutralizing antibodies or protection from the virus (Honda-Okubo, Y., 2015).

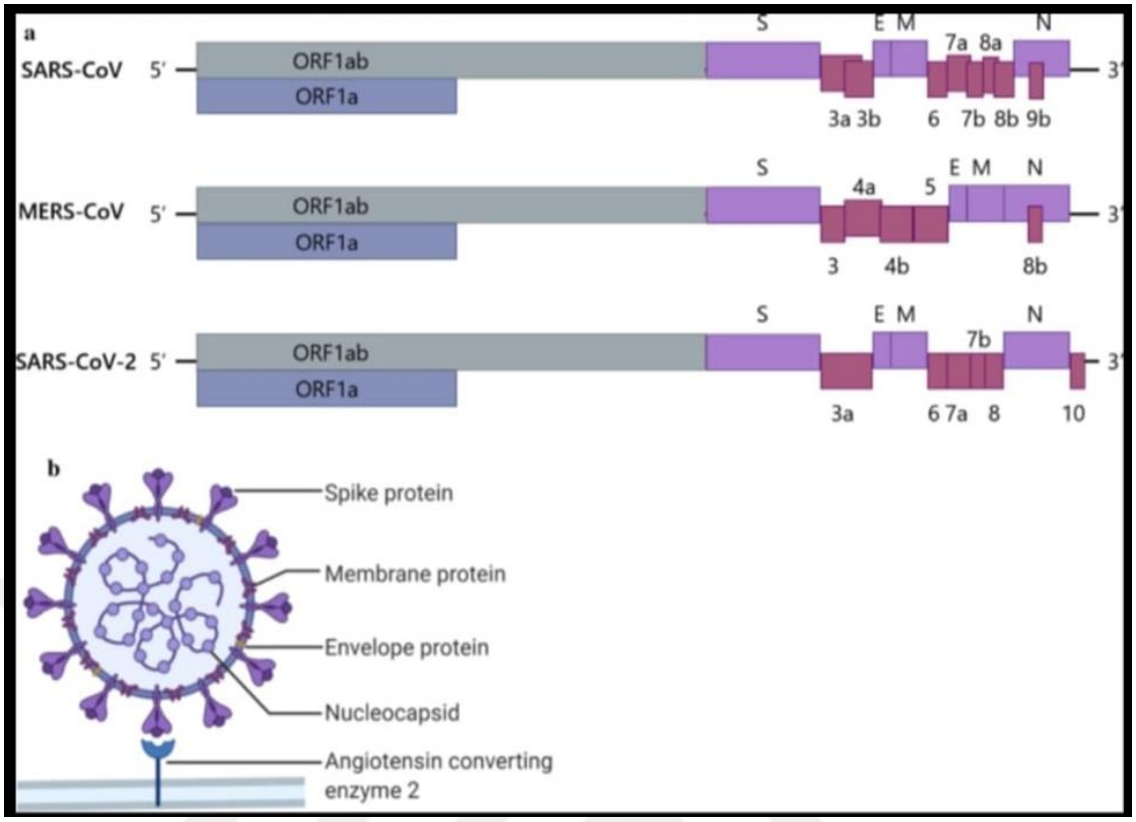

Figure 2.10 Chromosomes and the structure of a cell.

This picture also shows a chromosome and the structure of a cell. When you look at coronaviruses, you will see that they have chromosomes and can be made (COVs). They are called SARS, MERS, and SARS-CoV-2 (SARS-CoV-2). Everybody is not the same. Some of the COV genes are called open reading frames "ORFs". They make up about one-third of the genome. There are two open frames for reading (ORFs). It didn't help anyone. Then, pp1a and pp1b are made (Li, Y. D., Chi, W. Y., 2020).

There are also two types of poly proteins made by the open reading frame ORF 1b, called pp1a and pp1b (pp). After they break two poly proteins, the non-structural proteins that make up ORF 1a and ORF 1ab break down into 16 after they do. In this case, these proteins are not part of the body nonstructural proteins (Nsps). Not just the COV genome that has a lot of proteins, there are also a lot of other proteins that can be found in parts of the virus marked by the letters S, E, M, or N, like this one. Many more can be found in the genome of a coronavirus (COV) virus. In order for the virus to grow, it needs these proteins (Koyama, T., 2020).

There are proteins in the COV genome that are unique to the genus. Near the end, 45 are. SARS-CoV-2 is a virus that looks like: Spikes (S), an envelope (E), and proteins called membranes make up Cov's envelope. It's made up of three proteins called membranes (M). N is a type of protein that makes nucleocapsids. It puts genomic RNA into the capsids that are part of the protein and part of when they are made. They work together to make angiotensin converting enzyme 2 (ACE2), which is found on the surface of cells. This is how spike protein works with ACE2. So, the virus can get into the cell this way (Wang, N., 2020).

2.4. Protein subunit vaccine

To make virus antigenic fragments that can be used in protein vaccine formulations, recombinant protein methods are used to make these fragments. Some people prefer simple vaccines like a whole virus or viral vector vaccines because they have a lower risk of side effects and are easier to make than more complicated vaccines like these (Tai, W., Wang, Y., 2017).

Protein subunit vaccines do not work very well, which makes it hard to get a vaccine against proteins. Adjuvants and substances that make the immune system work better are often added to subunit vaccines to deal with this problem, but this does not always work. Full length S protein vaccines were the first step in making SARS-COV protein subunit vaccines. People waited for a while before S protein receptor binding domain (RBD)-based vaccines were out. SARS-COV protein component vaccination did not work in animal models of the disease, but significant antibody responses and protective benefits were found in people who had the disease (Adney, D. R.,2019).

2.5. DNA vaccine

DNA vaccines store parts of viruses that make people sick. A virus called a "plasmid vector" has been made that can be electro-orated into cells. These vectors are viruses that carry antigenic components. According to this study, DNA vaccines do not work as

well as traditional immunization. They could be very useful in the fight against new diseases like SARS, which can quickly spread and kill (SARS-CoV2). It also helps the cell grow and change after the virus antigens are changed into DNA vaccine antigens (Modjarrad, K., Roberts, C. C., 2019).

Figure 2.11 DNA vaccine for coivd-19.

On the other hand, DNA vaccines do not work because they cannot spread and grow inside the body after being injected. If things like "prime-boost" are added to DNA vaccines, they can work better. A person may become mutagenic and congenic if DNA vaccines are added to their genome (Smith, T. R., 2020).

2.6. Viral vector vaccine

A virus that has antigens that are not the same as the virus that made the vaccines can be used to make vaccines. As in real infections, they get antigens into cells in a way that is very much like how this happens. It means there is no need for more adjuvants in the lab to make the immune system work even harder (Al-Amri, S. S., 2017).

It is possible for viruses to add a lot of DNA to their genomes, which makes them good at making a wide range of antigens. Despite the good things, there are a few things to keep in mind. In order to make viral vector vaccines, cell systems need to be changed

and contaminants need to be removed. This makes them take longer to make than traditional vaccines. When making viral vectors, all of these things must be taken into account (Schindewolf, C., 2019).

2.7. Middle east respiratory syndrome coronavirus viral vector vaccine

Vaccines based on adenovirus are being made now. Some people who have the adenovirus types S or S1 make MERS-COV S. When mice ate this protein, they made antibodies that could stop the virus from spreading. As soon as possible, people will start taking part in tests for the vaccines against the MERS (Zhu, F. C., 2020).

Even the Ad5-MERS and S protein nanoparticle vaccines were a great idea because they could fight the virus, they did not work well at first. In order to keep the mice from getting the MERS-COV, but they used an Ad5/MERS priming vaccine and a spike protein nanoparticles boosting vaccine, which worked together. Even though Ad5 or nanoparticles alone doses were bad for the mice, this vaccine didn't make them sick. It also led to more balanced T1/T2 responses than Ad5 or nanoparticles alone. Because of this, the mice got sick, before they got vaccinated because of a virus called MERS-COV, which caused them to get sick (Jung, S. Y., 2018).

2.8. Whole inactivated vaccine

Immunized processes that come with a picture are only safe and good when people have them. People used to use them, but they have been chemically or radioactively damaged to the point where there is no longer any use for them. The parts of the virus that make people sick have been destroyed, so the virus cannot re-start. They have everything that makes people sick. The virus may change shape when it is killed, which makes it less effective at protecting people. There is a chance that people who get vaccines for SARS-COV and MERS-COV might have problems with their eosinophil in their lungs after they get them. Even if they get the full inactivated vaccines, this is true. Because

there is no way for you to get full-inactivated vaccines, there is no way for you to do that either (Deng, Y., 2018).

Whole viruses that had been killed could be used to make vaccines for SARS and COV as well, so they could also be used to make vaccines for those viruses. This is when ultraviolet light and formaldehyde are used to kill the SARS-COV in a way that does not hurt people. When antibodies are made in a lab, they can be used to help people. One thing that a lot of the people who took part in Phase I, clinical trials said. It was not dangerous, and making antibodies that could fight the virus that causes severe acute respiratory syndrome was also easy to do (SARS-COV) (Iwata-Yoshikawa, N., 2014).

2.9. Live attenuated vaccine

An attenuated vaccine is a live virus that has had a dangerous part of its DNA removed or changed. In terms of immunogenic components, this means that they are almost the same as vaccines that have been completely killed. Antigens are shown to the immune system in the same way that real viruses are shown. The most effective vaccines are those made from live attenuated strains, but there are a lot of other types. They have been able treat a wide range of infections over past years (Menachery, V. D., 2018).

Figure 2.12 Live attenuated vaccine.

After getting live attenuated immunization, some people are more likely to get infections again, but this is not true for all people. When a live attenuated vaccine is used in a medical setting, there are a lot of things that need to be done first to make sure it can work. People need to spend a lot of time on biosafety tests. No live attenuated (SARS COV) and (MERS COV) vaccines have been made for people to study. To do this study, researchers used the envelope protein to look at lung inflammation as well as how it helps the body stay in place (Menachery, V. D., Gralinski, L. E., 2017).

Coronaviruses that do not have the E protein can be less dangerous in certain situations. It is less likely for severe acute respiratory syndrome-coronavirus mutants without the E gene to infect hamsters. This is because they do not have the gene. In order to fight off the coronavirus, the body's NSP16 protein can be targeted with a vaccine. This helps the immune system in its fight against the virus. Ribose 2′-O-methyltransferase is a gene that makes an enzyme that helps cap viral RNA at its 5′ end. This enzyme is important for making sure the virus can't spread (Schoeman, D., 2019).

2.10. Recent progress on severe acute respiratory syndrome coronavirus-2 vaccine development

COVID-19 is different from SARS and MERS, which had only a few small outbreaks. It has spread all over the world. Because vaccine research is more important than it was in the past, more needs to be done. The way vaccines are made can be very different from one another. For example, vaccines can be made by having a group of people work on a vaccine at the same time. Many vaccine trials were done in a phase I/II or phase II/III format that combined the first and second stages (van Riel, D., 2020).

A very important thing must be done right away. Two types of vaccines are becoming more popular in the search for a COVID-19 vaccine because they do not need to be made with a virus or bacteria to work. Some of them are vaccines that are made with viruses and vaccines that use DNA. In the wake of influenza, ebola, and zika outbreaks, we can say with certainty that these cutting-edge platforms can handle any new infections that come up in the future (Lurie, N., 2020).

Two ways have been used to move the clinical development of the COVID-19 vaccine forward. Parallel investigations have been done instead of going in a straight line, which would have been the case. This has helped speed up the process. People tried some COVID-19 vaccine candidates before they had been proven to work in animal studies (Banday, A. H., 2020).

There is more demand for the Covid-19 vaccine, so pharmaceutical companies that make vaccines increase their production capacity to meet it. In fact, this is even more true for companies that are at the top of their field. There are a lot of vaccines that states and other countries pay for that have a good chance of working with it (Fisher, W. W., 2021).

2.11. RNA vaccine

There were no vaccines for SARS or the Middle East respiratory syndrome coronavirus in the last two decades. They do not work. There were a lot of COVID-19 around. As of today, people can try six new vaccines against the SARS-COV-2 virus for the very first time (SARS-COV-2). They do this by making messenger RNAs that can be used to make antigenic proteins, which are proteins that help the body fight infections (World health organization, 2020).

It's always better to use RNA vaccines with other treatments, like protamine or fat and polymer nanoparticles, than to use them alone. RNA vaccines are better than DNA vaccines for new diseases because they can adapt to new diseases and can mimic the antigenic protein's natural structure and changes, which makes them more effective than DNA vaccines (Gorman, M. J., 2021).

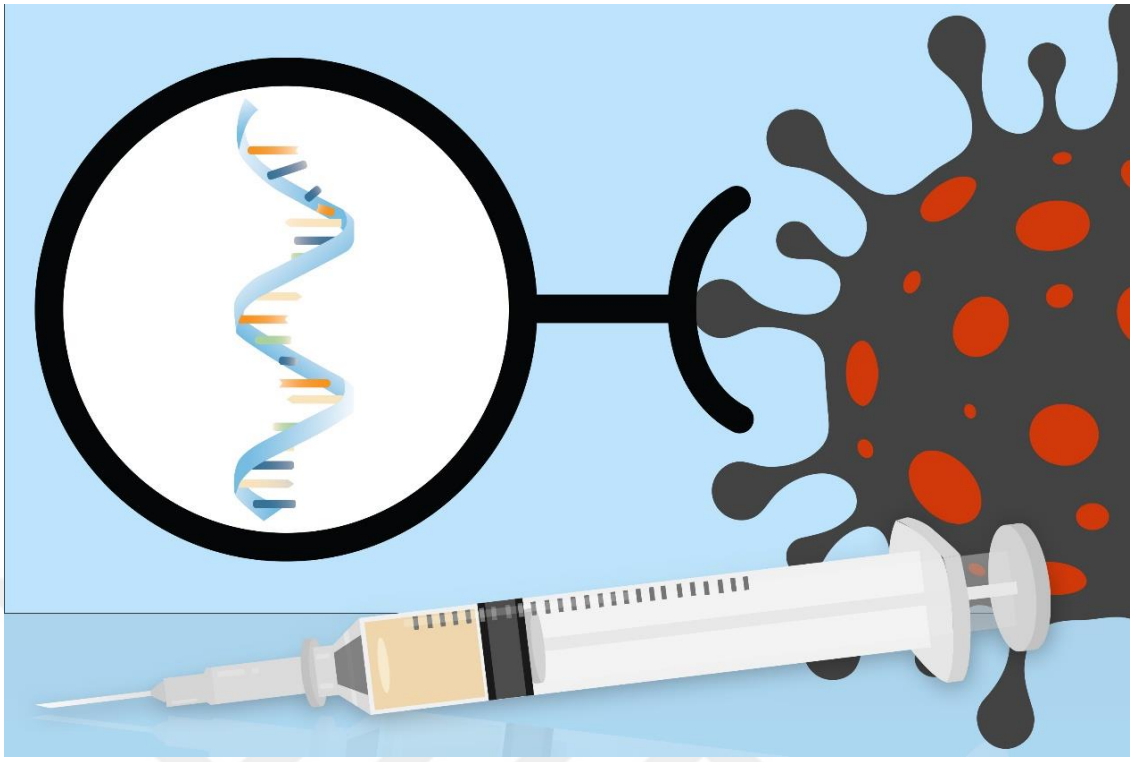

Figure 2.13 RNA vaccine.

RNA vaccines, on the other hand, have a few advantages over DNA vaccines when it comes to how well they work. It is not possible to integrate the genome because DNA and RNA don't work with each other (Walsh, E. E., 2020).

There are many ways to give RNA vaccines, such as by giving them intravenously in many different ways. It takes special technology to use DNA vaccines, like their electroporation or the use of a gene gun, so that they work. It is possible for a lot of bad things to happen when you use DNA vaccines. There is a good chance that interferon-mediated immunization will work better if RNA is sent from outside the body to the body. It has been linked to inflammation and the start of autoimmunity, too (Pardi, N., 2018).

2.12. Previous studies

The study conducted by nasir and his team in 2021 to find out how nurses felt about the coronavirus vaccine (Nasir, M., 2021).

Methods: It was one of the first and most important studies of HCWs (physicians, nurses and other subordinates) who worked at COVID-19 designated hospitals in Bangladesh. The study was done between 5/2/2021 and 7/3/2021, with 550 healthcare providers. It used a "convenience sampling" method and a structured questionnaire with 25 questions on a three-point scale.

Result: All the people who took part in the study were between the age of 18 and 64 years. The mean age was 36.17 ± 10.94 years old. Female health care providers made up the majority of the 524 people who took part in the study, with 323 (61.6%) and 201 (38.4%) making up more than half of the people who answered. Most people (94.34 percent) said COVID-19 symptoms were "strong" or more than enough." Even so, only 6.84 percent of nurses, 8.33 percent of physicians, and 11.59 percent of MLSS said they did not go to crowded public meetings to avoid handshakes. The majority of health care professionals (95.99 percent) were excited that free vaccines were available, and 87.40 percent said they were sure the vaccine would work and be safe against COVID-19.

Conclusion: the majority of healthcare professionals who work in COVID-19 dedicated institutions have a positive view and a positive attitude towards vaccination, but they do not do enough to prevent COVID-19. This could be very important for people to become more excited about vaccines and accept them, as well as for countries with limited resources to plan for a pandemic response.

3. METHODOLOGY

This chapter describes the research design employed, as well as the study's environment, sample selection, data collection tools and methodologies, and statistical analysis.

3.1. Design of the study

Descriptive cross-sectional study design was carried out in kirkuk, iraq, from november 2021 to april 2022 in kirkuk general hospital.

3.2. Setting of the study

The current study included (200) nurses out of the) 850)nurses of kirkuk general hospital in the city of kirkuk.

3.3. Location and sample

The study was conducted in kirkuk general hospital during the period of 11.2021 – 4.2022 in kirkuk city, using a non-probability (purposive) sample of 200 nurses out of 850 nurses working there.

Sampling criteria: All nurses work at kirkuk general hospital

Exclusion Criteria: Nurses who do not agree to fill out the questionnaire were excluded.

3.4. Tools of the study

A questionnaire was created for the purpose of the study using the interview technique after an exhaustive analysis of relevant materials. The total number of items included in the questionnaire was (22). All items were scored on a three-point scale: Yes (3), Uncertain (2), and No (1).

The questionnaire consists of two parts: -

1-Part one: - Socio-demographic characteristics.

This part included (7) items which focus on the nurses' demographic characteristics such as gender, age, residence, marital status, achievement, work the cardiac care unit and training courses in the field of cardiac care unit.

2- part two: Nurses opinion toward coronavirus vaccine.

This part included (15) questions about nurses' opinion toward corona vaccine.

Table 0.1 Questionnaire of the study: **Section one socio-demographic characteristics**

Gender	1-Male 2-Female
Age	1-20-29 years 2-30-39 years 3-40-49 years 4-50-59 years 6-60 and more
Residence	1-Urban 2-Rural
Marital status	1-Single 2-Married
Educational achievement	1-Preparatory nursing 2-Nursing Institute 3-Bachelor of Nursing and more
Did you work in the cardiac care unit?	1-Yes 2-No
Training courses in the field of cardiac care unit	1-Present 2-Not present

Section two: Nursing staff opinion toward coronavirus vaccine.

No.	Items	Yes	Uncertain	No
1	Would you recommend the COVID-19 vaccine?			
2	Would you like to have the COVID-19 vaccine administered to yourself?			
3	Do you find the COVID-19 vaccine helpful?			
4	Have you had the seasonal flu vaccine for the 2021/2022 winter season?			
5	Do you find the administration of certain vaccines unnecessary?			
6	The Covid-19 vaccine is not useful as it was developed during the epidemic.			
7	Do you think the Covid19 vaccine harms those who are administered?			
8	Do patients with COVID-19 need to be vaccinated after recovery?			
9	Has getting vaccinated helped you?			
10	Vaccine recommendation: Patients at risk should definitely be offered the Covid-19 vaccine.			
11	The Covid-19 vaccine developed during the epidemic is not safe.			
12	It is better to be naturally immune (by having the disease) against infectious diseases than vaccination			
13	Do you trust health institutions?			
14	I trust science to develop new safe effective vaccines.			
15	I trust the ministry of health to ensure vaccines are safe.			

3.5. Data collection method

An interview technique and a questionnaire were used to collect data. The average time for data collection was 20 minutes.

3.6. Research variables

Dependent variable: Coronavirus vaccine.

Independent variables: Nurses opinion.

3.7. Data Analysis

The data was analyzed with SPSS 22. To examine the association between dependent and independent variables, the t test and anova were utilized. Descriptive analyses were used for evaluation of data. The level of significance determined in the data assessment was $P \leq 0.05$.

3.8. Ethical dimension

The research was performed in the Kirkuk health directorship. Ethical permission NO: 41169, date 1-12-2021 (Appendix 1.1,1.2) was obtained from a Kirkuk health director to facilitate data gathering from Kirkuk general hospital in Kirkuk city. Permission was also obtained from the Cankiri Karatekin University, date 7-2-2022 (Appendix 1.3).

The researcher explained the study and the objectives to the nurses, then asked them to provide verbal agreement to participate in the study. Data gathering began after consent was obtained.

3.9. Validity of instrument

The content validity of the tool questionnaire has been determined (Nurses opinion toward coronavirus vaccine at Kirkuk city).

A panel of twelve experts was formed, consisting of (five) Experts From The College of Nursing / University of Kirkuk, (three) experts from the college of nursing / university of baghdad, (two) experts from the kirkuk general hospital, and (two) experts from the azadi teaching hospital. The specialists had at least ten years of expertise in their respective fields. Where the mean and standard deviation for their years of experience in the field was (18.75). These experts were given a copy of the research instrument and asked to review and test it for material clarity and adequacy to investigate the content of the questionnaire. The researcher followed both expert recommendations. Some

elements were left out after considering all of the feedback and suggestions. After making the necessary changes based on their answers, the questionnaire was deemed accurate.

3.10. Pilot study

To determine the reliability of the study instrument, a pilot study was carried out on (20) nurses that work in Kirkuk General Hospital from 6th to 20th September 2021. The criteria for nurses in the pilot study were the same as for the original study group. The pilot study sample was not included in the original study sample.

3.11. The Purposes of pilot study

1. To determine if the questionnaire contents are simple and understandable to the study's participants.
2. Calculate the average time spent collecting data.
3. Calculate how much time each person would have to fill the instrument.
4. To recognize any possible problems that can arise during this study.
5. To determine the questionnaire's reliability.

3.12. The Result of Pilot Study

According to the findings of the pilot study, the questionnaire was easy to understand for the participants. The amount of time it takes to complete the questionnaire was 20 minutes.

3.13. Reliability of the Instrument

The cronbach's alpha test was performed to analyze the reliability of the testing instrument for (22) items using the statistical package for social science program (SPSS).

Table 0.2 Reliability of research instruments.

Methods of reliability	Criteria of the study	Actual values	No.of Items	Assessment
Cronbach's Alpha	**Nurses opinion**	**0.84**	22	**Very good**

Table 0.3 List of experts.

No.	Expert name	The scientific title	Work place	Precise specialization	Years of experience
1-	**Dr. Sabah abbas ahmed**	Prof.	Baghdad university / college of nursing	Adult nursing	14 years
2-	**Dr. Khaleda Mohamed Khedr**	Prof.	Baghdad university / college of nursing	Adult nursing	19 years
3-	**Dr. Sadiq abid hussein**	Assist. Prof.	Baghdad university / college of nursing	Adult nursing	10 years
4-	**Dr. Salah mohamed saleh**	Assist. Prof.	Kirkuk university/ college of nursing	Adult nursing	32 years
5-	**Dr. Jinan akbar shukour**	Assist. Prof.	Kirkuk university/ college of nursing	Community health nursing	32 years
6-	**Dr, Hiwa satar salih**	Assist. Prof.	Kirkuk university/ college of nursing	Community health nursing	25 years
7-	**Dr. Nizar ahmed mahmoud**	Assist. Prof.	Kirkuk university/ college of nursing	Community health nursing	20 years
8-	**Dr. Younes khader bayez**	Assist. Prof.	Kirkuk university/ college of nursing	Adult nursing	16 years
9-	**Dr. Ali akram ismail**	specialty doctor	Kirkuk general hospital	Internist	35 years
10-	**Dr. Hijran kamal al-Dabbagh**	specialty doctor	Kirkuk general hospital	Internist	30 years
11-	**Dr. Ahmed shaker shukr**	specialty doctor	Azadi teaching hospital	Internist	32 years
12-	**Dr. Inaam kamal ali**	specialty doctor	Azadi teaching hospital	Internist	30 years

4. RESULTS

Consist two parts:

Part 1: Demographic characteristics.

Table 0.1 Demographic characteristics of the study sample (No=200).

Variables	No.	%
Age		
20-29	87	43.5
30-39	88	44.0
40-49	22	11.0
50-59	3	1.5
Total	200	100.0
Gender		
Male	102	51.0
Female	98	49.0
Total	200	100.0
Residence		
Urban	165	82.5
Rural	35	17.5
Total	200	100.0
Marital status		
Single	144	72.0
Married	56	28.0
Total	200	100.0
Educational levels		
Preparatory nursing	31	15.5
Nursing institute	60	30.0
Bachelor of nursing and more	109	54.5
Total	200	100.0
Do you work in CCU		
Yes	80	40.0
No	120	60.0
Total	200	100.0
Training courses in the field of CCU		
Present	113	56.5
Not present	87	43.5
Total	200	100.0

Table (4-1) shows socio-demographic characteristics of the entire study sample. The data demonstrates that a significant percentage of nurses were between the ages of (30-39) years (44 %). In addition, 51.0 % of the respondents were male. In terms of residency (82.5 % lived in cities), the majority of nurses were single and made up the majority of the workforce (72.0 %). Also, the results show that a high percentage of nurses hold bachelor of nursing and more and constitute (54.5%). In terms of work in CCU, (60.0%) did not work at CCU. Finally the result shows half of the nurses have training courses in CCU and constitute (56.5%).

Part II: Nursing staff opinion on the coronavirus vaccine.

Table 0.2 Nursing staff opinion toward coronavirus vaccine.

No.	Items	Yes		Uncertain		NO		MOS.	S
		F	%	F	%	F	%		
1	Would you recommend the COVID-19 vaccine?	121	60.5	49	24.5	30	15.0	2.4	HS
2	Would you like to have the COVID-19 vaccine administered to yourself?	119	59.5	33	16.5	48	24.0	2.3	HS
3	Do you find the COVID-19 vaccine helpful?	118	59.0	30	15.0	52	26.0	2.3	HS
4	Have you had the seasonal flu vaccine for the 2021/2022 winter season?	84	42.0	4	2.0	112	56.0	1.86	MS
5	Do you find the administration of certain vaccines unnecessary?	98	49.0	32	16.0	70	35.0	2.14	MS
6	The Covid-19 vaccine is not useful as it was developed during the epidemic.	78	39.0	85	42.5	37	18.5	2.2	MS
7	Do you think the Covid19 vaccine harms those who are administered?	42	21.0	69	34.5	89	44.5	1.76	MS

Table 4.2 (Contunue) Nursing staff opinion toward coronavirus vaccine.

8	Do patients with COVID-19 need to be vaccinated after recovery?	159	79.5	28	14.0	13	6.5	2.73	HS
9	Has getting vaccinated helped you?	92	46.0	76	38.0	32	16.0	2.3	MS
10	Vaccine recommendation: Patients at risk should definitely be offered the Covid-19 vaccine.	110	55.0	54	27.0	36	18.0	2.37	MS
11	The Covid-19 vaccine developed during the epidemic is not safe.	87	43.5	81	40.5	32	16.0	2.2.7	MS
12	It is better to be naturally immune (by having the disease) against infectious diseases than vaccination	109	54.5	50	25.0	41	20.5	2.34	MS
13	Do you trust health institutions?	121	60.5	32	16.0	47	23.5	2.37	MS
14	I trust science to develop new safe effective vaccines.	156	78.0	27	13.5	17	8.5	2.69	HS
15	I trust the ministry of health to ensure vaccines are safe.	112	56.0	43	21.5	45	22.5	2.33	MS

F= frequency

%= percentage

MOS= Mean of Score

NS= Not Significant = (1-1.4)

High Significant (HS) = (2.4 to 3) Moderate Significant (MS) = (1.8 – 2.39), low significant (LS) (less than 1.4).

Table (4-2) Shows nursing staff opinion on coronavirus vaccine and shows high significance in items (1,2,3,8,14) and moderate significance in items (4,5,6,7,9,10,11,12,15).

Table 0.3 Shows a one-way analysis of vaccination for differences in nursing staff attitudes towards coronavirus vaccine and age.

Categories	S.O.V	S S	M S	F.Obs
Nursing	Between group	23.255	7.752	.262 NS
	Within groups	5790.620	29.544	
	Total	5813.875		

F critical = 2.99
D f = 199
Table (4-3) reveals that there were no significant differences in nursing staff attitudes toward the Coronavirus vaccine and age at P value ≤ 0.05.

Table 0.4 T-test for comparison for the difference in nursing staff opinion toward coronavirus vaccine and gender.

Categories	Sex	No.	X	S.D	T.obs	**P** ≤ 0.05
Nursing staff opinion	Male	102	34.0882	5.86161	1.822	NS
	Female	98	34.9796	4.87362		

Df =198

Table (4-4) this table shows that there were significant differences between nursing staff opinion on coronavirus vaccine, and gender at P value ≤0.05.

Table 0.5 T-test for comparison for the difference in nursing staff opinion toward coronavirus vaccine and marital status.

Categories	Married status	No.	X	S.D	T.obs	**P** ≤ 0.05
Nursing staff opinion	Single	144	34.8472	4.94914	3.264	S
	Married	56	33.6964	6.40715		

Df = 198

Table (4-5) this table shows that there were significant differences between the nursing staff opinion on coronavirus vaccine and marital status at P value ≤0.05.

Table 0.6 Shows a one-way analysis of variance for the difference in nursing staff attitude towards coronavirus vaccine based on the education level.

Categories	S.O.V	S S	M S	F.Obs
nursing staff opinion toward coronavirus vaccine	Between Groups	188.046	94.023	3.292 S
	Within Groups	5625.829	28.558	
	Total	5813.875		

F critical = 2.99

Df = 199

Table (4-6) this table shows that there were no significant differences between nursing staff opinion toward coronavirus vaccine and education level P value ≤0.05.

Table 0.7 T-test for comparison of nursing staff attitudes concerning coronavirus vaccine and residency.

Categories	Residence	No.	X	S.D	T.obs	P≤ 0.05
Nursing staff knowledge	Urban	165	34.7939	5.11633	2.638	NS
	Rural	35	33.2571	6.53652		

Df =198

Table (4-7) this table shows that there were no significant differences between nursing staff opinion toward coronavirus vaccine, and residence at P value ≤0.05.

Table 0.8 T-test for comparison of nursing staff attitudes toward coronavirus vaccine and working in a CCU.

Categories	Work in CCU	No.	X	S.D	T.obs	P≤ 0.05
Nursing staff knowledge	Yes	80	34.8000	5.53562	0.016	S
	No	120	34.3417	5.33184		

Df =198

Table (4-8) this table shows that there were no significant differences between nursing staff opinion toward coronavirus vaccine, and working at CCU P value ≤ 0.05.

Table 0.9 T-test for comparison of nursing staff attitudes about coronavirus vaccine and CCU training.

Categories	Training in CCU	No.	X	S.D	T.obs	P≤ 0.05
Nursing staff knowledge	Yes	113	33.8142	5.75163	3.284	S
	No	87	35.4483	4.79525		

Df =198

Table (4-9) indicates that there were no significant differences between nursing staff opinion toward coronavirus vaccine, and CCU training at P value ≤0.05.

5. DISCUSSION

Nurses' attitudes toward coronavirus vaccine during the COVID-19 outbreak can play an important role in controlling this infectious disease; thus, this is the first survey in kirkuk general hospital aimed at identifying the perceived risk and nursing attention to the COVID-19 outbreak among kirkuk residents.

Table (4-1) is the socio-demographic characteristics of the entire study sample. The data demonstrates a significant percentage of nurses between the ages of (30-39) years (44 %). The results related to most of the nurses were new assignments because we find most of them at the age (30-39). Also the results show that (51.0%) were male. (Lucia, V. C., 2021) mention in their study that men were more likely than women to get vaccinated, as the general public could tell from this. As a group, males seemed to be better predictors of COVID-19 vaccination acceptance than females were. (Gagneux-Brunon, A., 2021) states that almost all of the people who took part in these two studies were women, with 89.71 percent and 72.5 percent, respectively. Physicians were more interested in the COVID-19 vaccine than other health care workers were, but not everyone (Faris, S. H., 2021).

In terms of where they lived, 82.5 percent of the population lived in urban areas. This is thought to be because of the hospital in the governorate's center, which hires a lot of nurses from the city center. In terms of where they live, the data show that most of the people who took part came from cities. Most of the nurses were single, and they made up the majority of the workforce, too (72.0 percent). Also, the result shows a high percentage of nurses hold bachelor of nursing and more and constitute (54.5%). People who took part in this study were more than two-thirds university graduates or postgraduates. About (60.0%) did not work at CCU. Finally, the result shows half of the nurses (56.5%) had a training course in CCU. This is because most nurses should work at CCU after they finish school to complete the cycle of progress.

Table (4-2) shows nursing staff opinion toward coronavirus vaccine and shows high significance in items (1- Would you recommend the COVID-19 vaccine; 2-Would you like to have the COVID-19 vaccine administered to yourself? 3-Do you find the COVID-19 vaccine helpful? 8- Do patients with an COVID-19 need to be vaccinated after recovery? 14- I trust science to develop new safe effective vaccines). This refers to a positive opinion on the vaccine.

Our result is in agreement with study results done by (Kociolek, L. K., 2021). So studies analyzed attitudes or intentions about COVID-19 vaccines. People thought the vaccine would be available. A survey was done soon after the COVID-19 vaccine was approved, so 8.6% of HCWs had the COVID-19 vaccine.

(Shekhar, R., 2021) mentions that people in different countries and parts of the same country have very different plans for getting vaccinated against COVID-19. This is caused by a lot of different things. We also found that HCWs were afraid of other vaccines, which are not unusual. It is hard to get vaccinated against COVID-19, which the WHO says is one of the top 10 threats to world health. When people decide to get the COVID-19 vaccine, they will think about how HCWs feel about it. There are more people who get vaccinated when HCWs give them advice on how to do so. HCWs' opinions on vaccines may affect whether they tell their friends, family, and patients about the vaccines that they use, too.

(Lazarus, J. V., 2020) mention that in a number of studies in different countries people do not like the idea of having COVID-19 vaccines in the future in groups of 30–40 percent of the general population. One of the main reasons why people are afraid of the new vaccines is that they do not know how safe they are. In terms of health-care workers, having had pandemic influenza vaccines in the past suggests that not all of them will agree to be vaccinated against COVID-19.

Table (4-3) depicts no significant differences between nursing staff opinion toward coronavirus vaccine and age at P value ≤ 0.05. This result is related to the vaccine effect on all ages and not limited for some ages than others. This result is supported

(Maharmeh, M., 2017). A descriptive correlational design was used to find out how Jordanian critical care nurses felt about autonomy in their work. It is found that 62% of the sample was between the ages of 22 and 30 years and there was no significant association between age and nursing opinion toward corona vaccine.

Table (4-4) reports significant differences between nursing staff opinion toward coronavirus vaccine, and gender at P value ≤ 0.05. Another study found that the majority of people who took part in the study were male. Discussion of the Study Findings 91 (54.2%) (Gizaw, A., Kidane, B., Negese, D., & Negassa, E., 2018). The challenging nature of the nursing profession has hindered females to become nurses. They had to give up their jobs, which caused a big problem. According to Iraqi Nursing Syndicate (INS) statistics, the male-to-female nurse ratio is 75:25 with no significance between nurses' opinion and gender.

Table (4-6) reveals no significant differences between nursing staff opinion toward coronavirus vaccine and education level ≤ 0.05. This shows the effect of the education level on nurses' opinion of Covid-19 vaccine. These findings may be explained by the fact that the Covid-19 pandemic had a global impact on the health care systems of the covered countries. There was an increase in the number of patients admitted to hospitals and a decrease in the number of healthcare professionals, particularly nurses, an increase in workload, and an economic impact, which resulted in a decrease in resources and necessary supply.

6. CONCLUSION AND RECOMMENDATIONS

Based on the study results, the researcher written the conclusions and recommendations as follow:

6.1. Conclusions

1- The findings suggest that the majority of nurses are between the ages of 30 and 39 years old, and they make up a sizable proportion of the workforce (44 percent). In addition, 51.0 percent of the respondents were male. In terms of residence, 82.5 percent of people lived in cities.
2- Most of the nurses were single and constituted (72.0%). The nurses with bachelor of nursing constitutions (54.5%) and (60.0%) did not work at CCU. Finally, the result shows half of the nurses have training courses in CCU (56.5%).
3- Only a few nurses have a bad attitude about the coronavirus vaccine. The majority of nurses have a good attitude about the vaccine.
4- There were no significant changes in nurses' attitudes toward the coronavirus based on age or marital status, however there were substantial disparities based on education level.
5- There are no significant variations in nursing staff attitudes about the coronavirus vaccine when compared to residence, but there are substantial disparities when compared to CCU working and training.

6.2. Recommendations

The present study recommends the following:

1- More efforts should be done to educate nurses about the coronavirus vaccine.
2- It is important to encourage nurses to teach patients about the coronavirus vaccine.
3- It is better to establish a coronavirus education program including its complications.

4- Future research is essential to assess and investigate nurses' attitudes toward warding the coronavirus in all Iraqi hospitals.
5- The study recommended that all nurses work together to encourage members of society to take preventive steps to avoid COVID-19 infection.
6- New information and questions about the COVID-19 vaccine should be given to people in the community so that they don't spread the disease.

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APPENDICES

Appendix 1. Ethical commitment from Cankiri Karatekin University
Appendix 2. Quesionnaire of the study (in the language of English)

Appendix 1. Ethical commitment from Cankiri Karatekin University

T.C.
ÇANKIRI KARATEKİN ÜNİVERSİTESİ
ETİK KURUL DEĞERLENDİRME FORMU

Toplantı No:	24
Araştırmanın Yürütücüsü:	SALEH GAZEI JUMA
Araştırmanın Başlığı:	Hemşirelerin Kerkük Kentinde Corona virus aşısına yönelik görüşleri
Karar Tarihi:	07-02-2022
Kurul Görüşü:	Kabul Edilmiştir. Araştırmanın/Projenin uygulanabilirliği konusunda bilimsel araştırmalar etiği açısından bir sakınca yoktur.

SONUÇ: Kabul Edilmiştir. Araştırmanın/Projenin uygulanabilirliği konusunda bilimsel araştırmalar etiği açısından bir sakınca yoktur.

Başkan
Prof. Dr. Hüseyin ODABAŞ
İMZA

Başkan Yardımcısı
Doç. Dr. Ela Özkan CANBOLAT
İMZA

Üye
Prof. Dr. Gülcihan YILDIRIM
İMZA

Üye
Doç. Dr. Hakan ÇOLAK
İMZA

Üye
Doç. Dr. Bilgehan TEKİN
İMZA

Üye
Doç. Dr. Emine ÇELİKSOY
İMZA

Üye
Dr. Öğr. Üyesi Serap Aslan COBUTOĞLU
İMZA

Üye
Dr. Öğr. Üyesi Haydar KOÇ
İMZA

Üye
Dr. Öğr. Üyesi Süheyla BOZKURT
İMZA

Üye
Avukat Mehmet ÇAKMAK
İMZA

Çankırı Karatekin Üniversitesi

Apendix 2. Quesionnaire of the study (in the language of English)

Section one: Socio-demographic characteristics

Gender	1-Male 2-Female
Age	1-20-29 years 2-30-39 years 3-40-49 years 4-50-59 years 6-60 and more
Residence	1-Urban 2-Rural
Marital status	1-Single 2-Married
Educational achievement	1-Preparatory nursing 2-Nursing Institute 3-Bachelor of Nursing and more
Did you work in the cardiac care unit?	1-Yes 2-No
Training courses in the field of cardiac care unit	1-Present 2-Not present

Section two: Nursing staff opinion toward coronavirus vaccine.

No.	Items	Yes	Uncertain	No
1	Would you recommend the COVID-19 vaccine?			
2	Would you like to have the COVID-19 vaccine administered to yourself?			
3	Do you find the COVID-19 vaccine helpful?			
4	Have you had the seasonal flu vaccine for the 2021/2022 winter season?			
5	Do you find the administration of certain vaccines unnecessary?			
6	The Covid-19 vaccine is not useful as it was developed during the epidemic.			
7	Do you think the Covid19 vaccine harms those who are administered?			
8	Do patients with COVID-19 need to be vaccinated after recovery?			
9	Has getting vaccinated helped you?			
10	Vaccine recommendation: Patients at risk should definitely be offered the Covid-19 vaccine.			
11	The Covid-19 vaccine developed during the epidemic is not safe.			
12	It is better to be naturally immune (by having the disease) against infectious diseases than vaccination			
13	Do you trust health institutions?			
14	I trust science to develop new safe effective vaccines.			
15	I trust the ministry of health to ensure vaccines are safe.			

CURRICULUM VITAE

Surname : Saleh Gazei Juma Juma

Language Skills:

	READ	WRITE	SPEAK	UNDERSTAND
English:	Good	Good	Good	Good
Arabic:	fluent	fluent	fluent	fluent
Turkish:	Good	Not Good	Not Good	Good

Education and Academic Degrees:

- 2009 - 2013 Bachelor Degree. College of Nursing, University of Kirkuk.

Professional Experience

- 2014 - 2021 worked in the respiratory care unit, a surgeon's assistant, the artificial kidney, the epidemiology unit, as well as an anesthetic assistant in Kirkuk General Hospital

MEDECINS SANS FRONTIERES (MSF) Organization:

- I worked as a psychosocial support and health support patient during work at triage in MSF as well as individual patient sessions.
- -2017 - 2018 Worked Nurse at MEDECINS SANS FRONTIERES (MSF) more than one year(Dabis Emergency, Vaccines campaign in Daquq camp, Daquq camp & Hawja & Abbass for OPD & NCD & ER),
- I have a lot of training with MEDECINS SANS FRONTIERES (MSF).

Medair Organization:

- Has worked with medair in Kirkuk in the positions from 10 February 2019 to 31 December 2019 triage and lab test as well as psychological and health awareness sessions in sulaiman beg, yangjia, lylan2,and hodh6 village, hawija and Ryahd.

Supervisor:

- Knowledge practice and coverage (KPC)
- KPC survey methodology and conducted KPC surveys for 1 week in Tooz District, Salah al-Din Governorate in June 2019.

Activities:

- 2017 - 2018 Providing aids for Iraqi Displaced People in coordination with MEDECINS SANS FRONTIERES (MSF) Organization.
- 2019 Providing aid for Iraqi Displaced People in coordination with the Medair Organization.

Scientific Study Areas: Public Health Nursing

Certificates:

1- Course for developing has Nursing skills and applications
From the period 25.08.2012 to 15.09.2012 at OSM (Ortadoğu
Sağlık Merkezi) Middle East Hospital in Şanlıurfa-Turkey.
2- Course of Control of infection in hospitals.
3- Course of the safety of the patient in Baghdad city.
4- Course of infectious diseases and epidemics with the department of health.
5- Course of respiratory system and tubation with department of health.