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Investigation Of the Effects of Three COVID-19 Vaccines

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Keywords: Applied Statistics, AstraZeneca, Sinopharm, Pfizer-Biontec, SPSS Program.

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Abstract:

This research deals with the three types of COVID-19 vaccines (AstraZeneca vaccine, Sinopharma, and Pfizer-Biontech) in terms of manufacturing, producing companies, and the countries in which the tests were conducted, in addition to the teams that provided the researchers with these vaccines. In this research, a statistical study about the effectiveness of these vaccines is presented and the extent of their impact on the vaccinator if he was healthy or carrying some other diseases. After that, a statistical study is presented, comparing it between the types of vaccines and which one is the most used, by taking a sample from the State of Iraq, Maysan Governorate, consisting of 60 individuals who took the vaccine. a special questionnaire was used for this purpose and the results were, another questionnaire about the acceptance of the local community results were analyzed using an SPSS program (**Table 5**, **6** and **7**). Another questionnaire about the acceptance of the local community representing Maysan Governorate to obtain the vaccine for the emerging coronavirus, COVID-19. The questionnaire was also delivered to statistical specialists before submitting the questionnaire. Important results were obtained, including the most received vaccine Pfizer-BioNTech and Sinopharm, by 40% and all those who received the vaccine were not infected after taking the vaccine.

Keywords: Applied Statistics, AstraZeneca, Sinopharm, Pfizer-Biontec, SPSS Program.

دراسة تأثيرات اللقاحات الثلاث لكوفيد-١٩

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الخلاصة:

تعرفنا في هذا البحث على الأنواع الثلاث للقاحات كوفيد-١٩ (لقاح أسترازينيكا، وسينوفارما، وفايزر-بيونتك) من حيث التصنيع والشركات المنتجة والدول التي أجريت فيها الاختبارات، بالإضافة إلى الفرق التي قدمت لنا هذه اللقاحات. وقد قدمنا في هذا البحث دراسة إحصائية عن فعالية هذه اللقاحات ومدى تأثيرها على الملقّح إذا كان سليماً أو حاملاً لبعض الأمراض الأخرى. بعد ذلك قمنا بعرض دراسة إحصائية، ومقارنتها بين أنواع اللقاحات وأيها الأكثر استخداما، وذلك من خلال أخذ عينة من دولة العراق محافظة ميسان، مكونة من ٦٠ فردا ممن أخذوا اللقاح. وزودناهم باستبيان خاص بنتائج الاستبيانات، وتم تحليل نتائج الاستبيان باستخدام برنامج SPSS، وقدمنا استبياناً آخر حول مدى قبول المجتمع المحلي ممثلاً في محافظة ميسان للحصول على اللقاح المضاد لفيروس كورونا المستجد، كوفيد-١٩، كما تم عرض الاستبيان على المختصين الإحصائيين قبل تقديم الاستبيان. وتم الحصول على نتائج مهمة، من بينها اللقاح الأكثر تلقيا هو فايزر-بيونتك وسينوفارم بنسبة ٤٠٪ وجميع من تلقوا اللقاح لم يصابوا بالعدوى بعد أخذ اللقاح COVID-19.

الكلمات المفتاحية: إحصاء تطبيقي، لقاح استرازينيكا، لقاح سينوفارم، لقاح فايزر- بايونتك، برنامج SPSS.

1. Introduction

Following the disease's initial appearance in Wuhan, China, in early December 2019, and its subsequent spread to other Chinese cities before rapidly expanding to the rest of the world, the World Health Organization formally declared on January 30 that the virus outbreak represents a public health emergency of global concern and verified On March 11, the outbreak developed into a pandemic, resulting in an unprecedented occurrence that could necessitate a concerted international response and threaten the public health of other nations due to the disease's international spread. As of May 26, 2021, there have been over 167 million cases of Covid-19 infections across more than 188 countries and regions. which includes over 3,480,000 deaths and over a million infected individuals who have recovered. With over 25% of the confirmed infections worldwide, the United States is the nation most impacted by the pandemic **[1][2]**. The primary method of virus transmission is close contact between people, frequently through respiratory droplets from talking, sneezing, or coughing. Droplets typically don't travel very far

through the air before landing on the ground or other surfaces. In an uncommon scenario, people can contract the virus by touching their mouth, nose, or eyes after coming into contact with a contaminated surface [1][3][4][5].

In patients who are asymptomatic, the disease may spread prior to the onset of symptoms, with the highest transmissibility occurring in the first three days following the onset of symptoms.

Significant global social and economic harm was caused by the pandemic, including the greatest recession since the Great Depression, as well as the postponement or cancellation of athletic, religious, political, and cultural events, a severe shortage of supplies and equipment made worse by panic buying, and a decrease in greenhouse gas and pollutant emissions. Online misinformation about the virus has proliferated, and there have been instances of racial discrimination and xenophobia directed towards Chinese individuals and those who are thought to be Chinese or to originate from regions with elevated infection rates. Approximately 73.5% of students worldwide were impacted by the national or local closure of schools, universities, and colleges in 190 different countries. After that, most universities and schools resorted to electronic study, and their level of success varied from one country to another and from one city to another, where students whose financial condition is not Good. They are suffering from the costs of using educational aids, because they require the availability of the Internet and continuous electric power, which has caused many students to leave their schools and universities [6][7].

All of this required the developed countries to conduct tests and take samples to find a vaccine that would help end this pandemic. Therefore, many teams in companies, universities, and research centers (Oxford University, Edward Jenner Institute, ...) conducted many tests and took samples to reach a suitable vaccine. We all know the importance of mathematics, as many diseases are studied based on mathematical models [8] Sometimes the stability of these diseases or the extent of their control is studied [9][10].

2. Research Importance

The following are just a few of the statements that highlight the significance of the research:

1. Educating others about the significance of receiving the vaccination.
2. Providing enough details about every kind of vaccination, including its composition, effectiveness, level of safety, and adverse effects.
3. Outlining the community sample's views on vaccination acceptance and the degree to which it is accepted.

4. Knowing the most used types of vaccines through the statistics mentioned in the research.

3. Questions

• The most important questions about taking the vaccine are as follows:

• What does the AstraZeneca vaccine mean?

• What does the Sinopharm vaccine mean?

• What does the Pfizer-BioNTech vaccine entail?

• What are the most used vaccines?

• What are the side effects after taking the vaccine?

• Is the person infected after taking the vaccine?

•How many doses should the vaccinator take?

4. Target Groups

There are targeted groups to take this vaccine because they are more likely to be exposed to Covid-19 compared to the rest of their peers, so the priority was for them to take the vaccine dose, and these groups are:

1- Employees of the Ministry of Health (with all their job titles) (high risk, medium risk, low risk).

2- The elderly ($50-59$ years old, $60-69$ years old, over 70 years old)

3- People with chronic diseases.

4- Personnel from security forces (all kinds).

5- Displaced persons and refugees in camps.

6- People with cancer, immune disorders, and hereditary blood diseases.

7- Those with high-risk professions: (teaching staff, media professionals, employees at railroad and border crossings, eateries, and convicts residing in state houses and prisons.

5. Methods

For the purpose of this review, English-language articles published between January 15, 2020, and January 1, 2022 were searched using international databases such as PubMed, Web of Science, and Scopus. There were articles of every kind: OVID-19, new coronavirus, 2019-nCoV, coronavirus disease 2019, vaccination, Sputnik V, Gamaleya, Gam-COVID-Vac, Sinopharm, BBIBP-CorV, Oxford, ChAdOx1 nCoV-19, AstraZeneca, and AZD1222 were the keywords used. References were imported into Endnote software and duplicate titles were eliminated after collecting articles of interest. In the chosen research there are a total of 13 vaccines that have been approved by the emergency use listing (EUL), have national licenses,

or have conditional use, according to the UNICEF website (**Table 1**). Three vaccines are available in Iran: FAKHRAVAC (MIVAC), which has one trial, Razi Vaccine and Serum Research Institute (Razi Cov Pars), which has two trials, and Shifa Pharmed Industrial Co., which has four trials [15].

Table 1: Number of vaccine approvals reported by UNICEF [11][12][13][14]

Vaccine developer	WHO EUL	Licensure	Emergency/conditional use
Anhui Zhifei Longcom Biopharmaceutical	-	1	1
AstraZeneca	2	4	65
Beijing Institute of Biological Products (CNBG)	1	2	16
Bharat Biotech	-	-	6
CanSino Biologicals	-	-	5
Chumalov	-	1	-
Gamaleya Research Institute	-	8	54
Janssen	1	1	37
Moderna	1	1	33
Pfizer/BioNTech	1	6	58
Sinovac	-	-	23
Vector State Research Center	-	1	-
Wuhan Institute of Biological Products	-	1	1

6- COVID-19 Vaccines

After a lot of time has passed, the World Health Organization approved some types of vaccines after they proved their effectiveness. In this research, three types of these vaccines are explained that are more effective and accepted in most countries of the world.

6.1. AstraZeneca vaccine (AZD1222)

Oxford-AstraZeneca OZD1222 Vaccine (in English: AZD1222) It is also known as: ChAdOx1 nCoV-19 and is referred to in the media as: AstraZeneca vaccine, Oxford vaccine, or the newly formed Vacciferia vaccine. It is a vaccine against Coronavirus disease. It was developed and produced by Oxford University in collaboration with the British-Swedish company AstraZeneca. It is meant to be injected intramuscularly. A group led by Sarah Gilbert, Adrienne Hill, Andrew Pollard, Theresa Lambie, Sandy Douglas, and Catherine Green from the Oxford Vaccine Group and the Edward Jenner Institute for Vaccine Research is conducting the vaccine research. Phase III clinical trials for the vaccine were started in November 2020 [16].

Based on a regimen that involves administering half the dose and then the full dose after a minimum of one month, the vaccine proved to be 90% effective. These findings were derived from multiple trials involving participants who were all under the age of fifty-five. When two complete doses were administered at least one month apart, another dosage schedule demonstrated 62% efficacy [17]. Working with the Italian vaccine manufacturer Advent SRI in Pomezia, on the IRPM campus, the Edward Jenner Institute and the Vaccine Research Group

at the University of Oxford conducted the study. The first batch of the COVID-19 vaccine for use in clinical trials was made at this facility [18]. Leading the research team were Sandy Douglas, Catherine Green, Teresa Lambie, Andrew Pollard, Adrienne Hill, and Sarah Gilbert. On December 30, 2020, the vaccine was approved for use in the UK immunization program, and on January 4, 2021, the first dose was given. In March 2021, some countries stopped Among them, Germany, France, Italy, Spain, the Netherlands, Norway, Denmark and Sweden have used the vaccine temporarily for fear of its connection to rare cases of blood clotting that have been observed in a small number of vaccine recipients. After the European Medicines Agency's statement, European countries resumed AstraZeneca vaccinations [19][20]. However, the controversy over the vaccine's relationship to rare blood clotting cases continued after doubts about the vaccine's effectiveness, which were later corrected, in addition to the death of seven people in Britain who received the AstraZeneca vaccine, Table 2 shows the characteristics of the vaccine [21].

Table 2: Characteristics Of The AstraZeneca Vaccine (AZD1222)

Property	the details
Vaccine Making Technology	Non-Replicating Viral Vector
Number Of Doses	2
The Interval Between Doses	٤weeks
Target Groups	+١٨ years old
Method Of Administration	Deltoid glaucoma
Storage Temperature	$(+2\ to\ +8)$degrees Celsius
Packing Type	Multi-dose vial
The Amount Of Vaccine In One Vial	(١٠)potions
Dose	0.5 ml
Pharmaceutical Form	Liquid
Vaccine Vial Monitor Vvm	Nothing
Open Bottle Policy	The vial is damaged 6 hours after opening it or at the end of the vaccination session
Effectiveness	70.4 %
Expiry	٦months
Light Sensitivity	Photosensitive
Side Effects	•Very common symptoms: pain, swelling and slight redness at the injection site, headache, joint and muscle pain, fever and feeling tired. •Common symptoms: flu-like symptoms (high temperature, pharyngitis, runny nose, cough and chills), fever, vomiting. •Uncommon symptoms: loss of appetite, abdominal pain, excessive sweating, itchy skin or rash, swollen lymph nodes.

6.2. Sinopharm vaccine (BBIBP-CorV)

It is one of the two candidate vaccines against coronavirus disease, which the China National Pharmaceutical Industries Group is developing and producing, and it is intended for intramuscular injection. As of December 2020, the vaccine has entered phase III clinical trials in: Among those with more than 60,000 subjects were Argentina, Bahrain, Egypt, Morocco, Pakistan, Peru, and the United Arab Emirates. Through China's emergency use program, almost one million people had received the vaccine as of November 2020. Nearly 100,000 UAE residents had gotten the vaccination by December 2020 as part of a voluntary program **[22][23]**. The Sinopharm vaccine was formally registered by the UAE on December 9, 2020, following an interim analysis of Phase III trials that revealed the vaccine's 86% efficacy against COVID-19 infection. It was given permission to use the vaccine along with Bahrain, but the UAE did not specify how it would be used **[24]**. On December 12, 2020, Peru halted trials of the Sinopharm vaccine to investigate an adverse event in a volunteer before restarting trials on December 16. The vaccine uses similar, more traditional technology as CoronaVac and other vaccines being developed in phase III trials **[25]**. Such technology has been successfully applied to many well-known vaccines such as the rabies vaccine, but the lack of public data could limit the vaccine's distribution in a variety of other countries, **Table 3**. shows the characteristics of the vaccine.

Table 3: characteristics of the Sinopharm vaccine (BBIBP-CorV) 6.3. Pfizer–BioNTech

Property	the details
Vaccine making technology	Inactivated virus (IV)
number of doses	2
The interval between doses	21 days
Target groups	60-18 years old
method of administration	Deltoid glaucoma
storage temperature	$(+2\ to\ +8)$degrees Celsius
packing type	Various fillings
The amount of vaccine in one vial	single and multiple
Dose	0.5 ml
Pharmaceutical form	Liquid
Vaccine Vial Monitor VVM	Nothing
Open bottle policy	The vial is damaged 6 hours after opening it or at the end of the vaccination session
Effectiveness	79.34 %
Expiry	9 months
light sensitivity	Photosensitive
side effects	Common symptoms (10%): such as pain, swelling and stiffness at the injection site, fatigue, body aches, mild diarrhea and fever that disappears within 4 days after taking the vaccine. Note: No other serious side effects have been reported with this vaccine, although people who are allergic to other vaccines or to the first dose of this vaccine may be at risk of an allergic reaction.

The WHO Strategic Advisory Group of Experts on Immunization released policy recommendations regarding the launch of Pfizer-BioNTech's COVID-19 vaccine, which was the first to be approved by the WHO under the Emergency Use Protocol. The Pfizer-BioNTech COVID-19 vaccine with mRNA technology is a safe and effective vaccination, according to the Strategic Expert Group. On the other hand, immunization is not advised for a few specific groups due to contraindications, a lack of supplies, or insufficient information. Currently, these groups include individuals who have experienced severe allergic reactions in the past, the majority of pregnant women, non-priority international travelers, and children under the age of sixteen. Currently, immunizing health workers who are at high risk of infection comes first, then the elderly, and then the general public. People with allergies The vaccine shouldn't be administered to anyone who has experienced severe allergic reactions to any of its ingredients in the past. expectant and nursing mothers COVID-19 is linked to an increased risk of accessible delivery and puts pregnant women at higher risk of serious complications. However, because there is not enough information at this time, the organization does not advise pregnant women to get vaccinated. A pregnant woman may be advised to consider vaccination in consultation with her healthcare provider if there is an unavoidable risk of exposure (such as working in healthcare). The nursing mother can get the vaccination if she belongs to a group that is advised to get it (like health professionals). The WHO advises against quitting breastfeeding following immunization. Children younger than 16 have not been subjected to vaccination trials. Therefore, even though they belong to one of the groups most at risk of infection, the WHO does not currently recommend immunizing children under the age of sixteen. Individuals with Recognized Health Issues It has been demonstrated that the vaccine is both safe and effective in individuals with a range of illnesses linked to a higher risk of developing serious illnesses. This covers stable and managed chronic conditions as well as diabetes, asthma, pulmonary disease, liver, and kidney disease. Further research on how the vaccine affects individuals with compromised immune systems is required. According to the initial recommendation, immunocompromised individuals who belong to a group that is advised to be vaccinated may get the recommended vaccination, but only after receiving information and counseling, if available. COVID-19 can cause serious complications for people living with HIV. Little information about the safety of vaccines in HIV-positive individuals under close observation has been obtained from clinical trials. As much as possible, those getting immunizations should be advised and made aware of the data that is currently available. People who have had COVID-19 in the past can be vaccinated. However, due to limited vaccine supplies, these people may

wish to defer vaccination for up to 6 months after they have been infected with SARS-CoV-2. As more information on the length of acquired immunity following infection becomes available, this time frame may be adjusted. It is not advised to test for prior infections when making vaccination decisions. Visitors At this time, the World Health Organization opposes requiring proof of COVID-19 vaccination from foreign visitors in order to grant them permission to enter or exit a nation or to travel abroad. View the WHO's preliminary travel advice while visiting other countries during the Covid-19 pandemic. The first dose of the vaccine has a protective effect that lasts for 12 days. However, in order to obtain complete protection, two doses must be administered; the recommended interval between the two doses is 21 to 28 days. More research is needed to understand the longer-lasting protection that may occur after receiving just one dose of the virus, **Table 4**. shows the characteristics of the vaccine **[26]**.

Table 4: characteristics of the vaccine Pfizer–BioNTech

Property	the details
Vaccine making technology	Transfer RNA (mRNA) technology
number of doses	2
The interval between doses	21 to 28 days
Target groups	$+١٨$ years old
method of administration	Deltoid glaucoma
storage temperature	$(-60)\ to\ (-80)\ degrees\ Celsius$
packing type	Multi-dose vial
The amount of vaccine in one vial	(6) potions
Dose	0.3 ml
Single dose packing size	$1.8cm^3$
Pharmaceutical form	frozen liquid
Solvent type	The vial is damaged 6 hours after opening it or at the end of the vaccination session
Solvent type	9% Sodium Chloride solution
The amount of solvent required for each dose	$1.8ml$
Vaccine Vial Monitor VVM	Nothing
Open bottle policy	The vial is damaged 6 hours after opening it or at the end of the vaccination session
Effectiveness	95 %
Expiry	a- 6 months from 60 to 80 degrees Celsius b- Five days at $+2\ to\ +8$ degrees Celsius c- 6 hours after thawing at the time of the vaccination session
light sensitivity	Photosensitive
side effects	• Very common side effects include headaches, joint and muscle pain, mild pain and swelling at the injection site, fever (especially after the second dose), and so on. All of these symptoms usually go away in a few hours or with the help of basic analgesics. • Common signs and symptoms include injection site redness and nausea. • Uncommon symptoms include enlarged lymph nodes, sleeplessness, limb pain, overall weakness, and injection site itching. • Bell's palsy is a rare condition characterized by numbness

	and weakness in one side of the face's muscles. • Severe allergy symptoms that go undiagnosed; • Anaphylactic shock.

Table 5: The (Approximate) Number Of Targets In Maysan Governorate

Target group (approximate)					population	Governorate name
The total	Elderly people	risk groups	security forces	Health personnel		
271935	175635	35000	50000	11300	1171802	Maysan

7. The Questionnaire

A questionnaire about the emerging coronavirus (COVID-19) vaccine in Iraq, Maysan Governorate was conducted. It included two surveys, as follows:

7.1. A sample survey of people who had taken the COVID-19 vaccine

A sample survey of people who had taken the COVID-19 vaccine is presented in this section. The questionnaire included 60 people (**Figure1**), and the questionnaire appeared as follows:

1-What type of vaccine did you receive?

a) AstraZeneca 20% b) Sinopharm 40% c) Pfizer-BioNTech 40%

2- Were you afraid when you took the vaccine?

a) Yes 10% b) No 70% c) Some what 20%

3- Do you have the social media to get the vaccine?

a) Yes 100% b) No 0% c) somewhat 0%

4- Were you forced by virtue of your work to take the vaccine?

a) Yes, 5% b) No, 80% c) Somewhat 15%

5-What were the reasons that prompted you to take the vaccine (if you were not forced to take it)?

a) In response to the recommendations of the World Health Organization 10%

b) to the severity of your workplace 30% c) Self-desire 60%

6- Do you advise others to take the vaccine?

a) Yes, 95% b) No 0% c) Somewhat 5%

7- Are you satisfied with how the health staff dealt with you while you were vaccinated?

a) Yes, 95% b) No 0% c) Somewhat 5%

8- Do you have chronic diseases?

a) Yes, 25% b) No, 75%

9- Are you already infected?

a) Yes, 60% b) No, 30% c) Contact 10%

10- Did you contract the virus (Corona) after taking the vaccine?

a) Yes 0% b) No 100%

11- Have you made sure to educate others about the need to receive the vaccine?

a) Yes, 95% b) No 0% c) Kind of 5%

12- After you took the vaccine, did you return to your daily life as before?

a) Yes, 80% b) No 5% c) Somewhat 15%

13- What kind of vaccines would you advise others to choose when vaccinating?

a) AstraZeneca 20% b) Sinopharm 25% c) Pfizer-BioNTech 55%

14- Did you have any side effects after taking the vaccine?

a) Yes, 30% b) No 45% c) Somewhat 25%

15- Did you take the second dose of the vaccine?

a) Yes, 75% b) No 25%

By using the SPSS program, the possible measurements of central tendency and measures of dispersion for this questionnaire were found and explained:

Table 6: SPSS program

a

Statistics

		1-What type of vaccine did you receive?	2- Do you fear when you take the vaccine?	3- Do you have social contact with to do what?	4- Were you forced by virtue of your work to take the vaccine?	5-What were the reasons that prompted you to take the vaccine (if you were not forced to take it)	6-Do you advise others to take the vaccine	7- Are you satisfied with how the health staff dealt with you while you were vaccinated?	8-Do you have chronic diseases?
N	Valid	60	60	60	60	60	60	60	60
	Missing	0	0	0	0	0	0	0	0
Mean		2.20	2.10	1.00	2.10	2.50	1.10	1.10	1.75
Std. Error of Mean		.097	.070	.000	.057	.087	.057	.057	.056
Median		2.00	2.00	1.00	2.00	3.00	1.00	1.00	2.00
Mode		2[a]	2	1	2	3	1	1	2
Std. Deviation		.755	.543	.000	.440	.676	.440	.440	.437
Variance		.569	.295	.000	.193	.458	.193	.193	.191
Skewness		-.352	.079		.520	-1.019	4.236	4.236	-1.185
Std. Error of Skewness		.309	.309	.309	.309	.309	.309	.309	.309
Kurtosis		-1.148	.436		2.019	-.135	16.494	16.494	-.619
Std. Error of Kurtosis		.608	.608	.608	.608	.608	.608	.608	.608
Range		2	2	0	2	2	2	2	1
Minimum		1	1	1	1	1	1	1	1
Maximum		3	3	1	3	3	3	3	2
Sum		132	126	60	126	150	66	66	105
Percentiles	10	1.00	1.10	1.00	2.00	1.10	1.00	1.00	1.00
	20	1.20	2.00	1.00	2.00	2.00	1.00	1.00	1.00
	25	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.25
	30	2.00	2.00	1.00	2.00	2.00	1.00	1.00	2.00
	40	2.00	2.00	1.00	2.00	2.40	1.00	1.00	2.00
	50	2.00	2.00	1.00	2.00	3.00	1.00	1.00	2.00
	60	2.60	2.00	1.00	2.00	3.00	1.00	1.00	2.00
	70	3.00	2.00	1.00	2.00	3.00	1.00	1.00	2.00
	75	3.00	2.00	1.00	2.00	3.00	1.00	1.00	2.00
	80	3.00	2.80	1.00	2.00	3.00	1.00	1.00	2.00
	90	3.00	3.00	1.00	3.00	3.00	1.00	1.00	2.00

a. Multiple modes exist. The smallest value is shown

b

Statistics

		9-Are you already infected	10-Did you contract the virus (Corona) after taking the vaccine	11-Have you made sure to educate others about the need to receive the vaccine	12-After you took the vaccine, did you return to your daily life as before	13-What kind of vaccines would you advise others to choose when vaccinating	14-Did you have any side effects after taking the vaccine?	15-Did you take the second dose of the vaccine
N	Valid	60	60	60	60	60	60	60
	Missing	0	0	0	0	0	0	0
Mean		1.50	2.00	1.10	1.35	2.35	1.95	1.25
Std. Error of Mean		.087	.000	.057	.095	.103	.096	.056
Median		1.00	2.00	1.00	1.00	3.00	2.00	1.00
Mode		1	2	1	1	3	2	1
Std. Deviation		.676	.000	.440	.732	.799	.746	.437
Variance		.458	.000	.193	.536	.638	.557	.191
Skewness		1.019		4.236	1.749	-.726	.082	1.185
Std. Error of Skewness		.309	.309	.309	.309	.309	.309	.309
Kurtosis		-.135		16.494	1.273	-1.040	-1.168	-.619
Std. Error of Kurtosis		.608	.608	.608	.608	.608	.608	.608
Range		2	0	2	2	2	2	1
Minimum		1	2	1	1	1	1	1
Maximum		3	2	3	3	3	3	2
Sum		90	120	66	81	141	117	75
Percentiles	10	1.00	2.00	1.00	1.00	1.00	1.00	1.00

Table 7:Questionnaire About Vaccines For The Emerging Coronavirus (COVID-19) In Iraq, Maysan Governorate,the possible measurements of central tendency and measures of dispersion for this questionnaire

Question1		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AstraZeneca	12	20.0	20.0	20.0
	Sinopharm	24	40.0	40.0	60.0
	Pfizer-BioNTech	24	40.0	40.0	100.0
	Total	60	100.0	100.0	
Question2		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	6	10.0	10.0	10.0
	No	42	70.0	70.0	80.0
	Somewhat	12	20.0	20.0	100.0
	Total	60	100.0	100.0	
Question3		Frequency	Percent	Valid Percent	Cumulative Percent
Val	Yes	60	100.0	100.0	100.0
Question4		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	5.0	5.0	5.0
	No	48	80.0	80.0	85.0
	Somewhat	9	15.0	15.0	100.0
	Total	60	100.0	100.0	
Question5		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In response to the recommendations of the World Health Organization	6	10.0	10.0	10.0
	to the severity of your workplace	18	30.0	30.0	40.0
	Self-desire	36	60.0	60.0	100.0
	Total	60	100.0	100.0	
Question6		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	57	95.0	95.0	95.0
	Somewhat	3	5.0	5.0	100.0
	Total	60	100.0	100.0	
Question7		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	57	95.0	95.0	95.0
	No	3	5.0	5.0	100.0
	Total	60	100.0	100.0	
Question8		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	25.0	25.0	25.0
	No	45	75.0	75.0	100.0
	Total	60	100.0	100.0	
Question9		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	60.0	60.0	60.0
	No	18	30.0	30.0	90.0
	Contact	6	10.0	10.0	100.0
	Total	60	100.0	100.0	
Question10		Frequency	Percent	Valid Percent	Cumulative Percent
Va	No	60	100.0	100.0	100.0
Question11		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	57	95.0	95.0	95.0
	Kind of	3	5.0	5.0	100.0
	Total	60	100.0	100.0	

Question12		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	80.0	80.0	80.0
	No	3	5.0	5.0	85.0
	Somewhat	9	15.0	15.0	100.0
	Total	60	100.0	100.0	
Question13		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AstraZeneca	12	20.0	20.0	20.0
	Sinopharm	15	25.0	25.0	45.0
	Pfizer-BioNTech	33	55.0	55.0	100.0
	Total	60	100.0	100.0	
Question14		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	30.0	30.0	30.0
	No	27	45.0	45.0	75.0
	Somewhat	15	25.0	25.0	100.0
	Total	60	100.0	100.0	
Question15		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	75.0	75.0	75.0
	No	15	25.0	25.0	100.0
	Total	60	100.0	100.0	

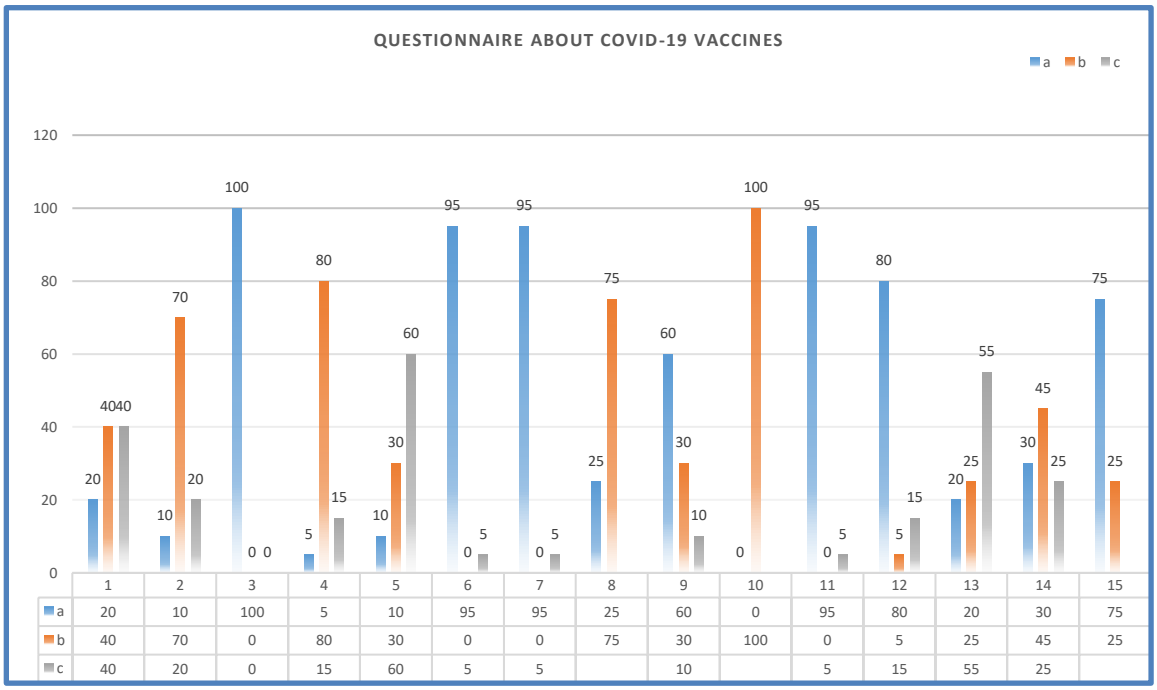

Figure 1: A Questionnaire About Vaccines For The Emerging Coronavirus (COVID-19) In Iraq, Maysan Governorate

7.2 A survey about the acceptance of the local community

A survey about the acceptance of the local community represented in Maysan Governorate was conducted to obtain the emerging coronavirus (COVID-19) vaccine in the event that the vaccine spreads more widely in the coming months. The questionnaire included 1666 people divided into three age groups

- The first is between 20 – 35 years old
- The second is between 36 – 60 years old

• The third is over 60 years old

The results of the questionnaire **Figure 2** were as follows:

1) If a vaccine against the emerging coronavirus (COVID-19) was available, would you take it?

a) Yes, 27% b) No 41% c) I don't know 32%

2) Do you think taking the vaccine is necessary?

a) Yes,2% b) No, 31% c) Somewhat 37%

3) Does taking the vaccine help you practice your daily life as before?

a) Yes, 26% b) No 39% c) Somewhat 35%

4) Are there any members of your family who received the vaccine?

a) Yes, 17% b) No 83%

5) Do you have concerns about receiving the vaccine?

a. Yes, 71% b) No 13% c) Somewhat 16%

6) Many vaccines are currently being circulated around the world. Do you find that the quality of the vaccine will be a reason to obtain it?

a) Yes, 42% b) No 21% c) Somewhat 37%

7) Do you agree or disagree with the following statement: "I will get the vaccine if I have enough information about its effectiveness, composition, safety, and side effects"?

a. Yes, 71% b) No 14% *b*)Somewhat 15%

8) Do you agree or disagree with the following statement: "I will get the vaccine if the majority of the public takes it"?

a. Yes, 26% b) No 51% c) Somewhat 23%

9) Did you make sure to educate others about the need to receive the vaccine?

a. Yes, 26% b) No, 57% c) Somewhat 17%

10) What are the categories that should be vaccinated as a priority if the COVID-19 vaccine is available?

a) Medical personnel 44%
b) Education cadres (professors, teachers, and educators) 13%

c) The elderly or those with chronic diseases 43%

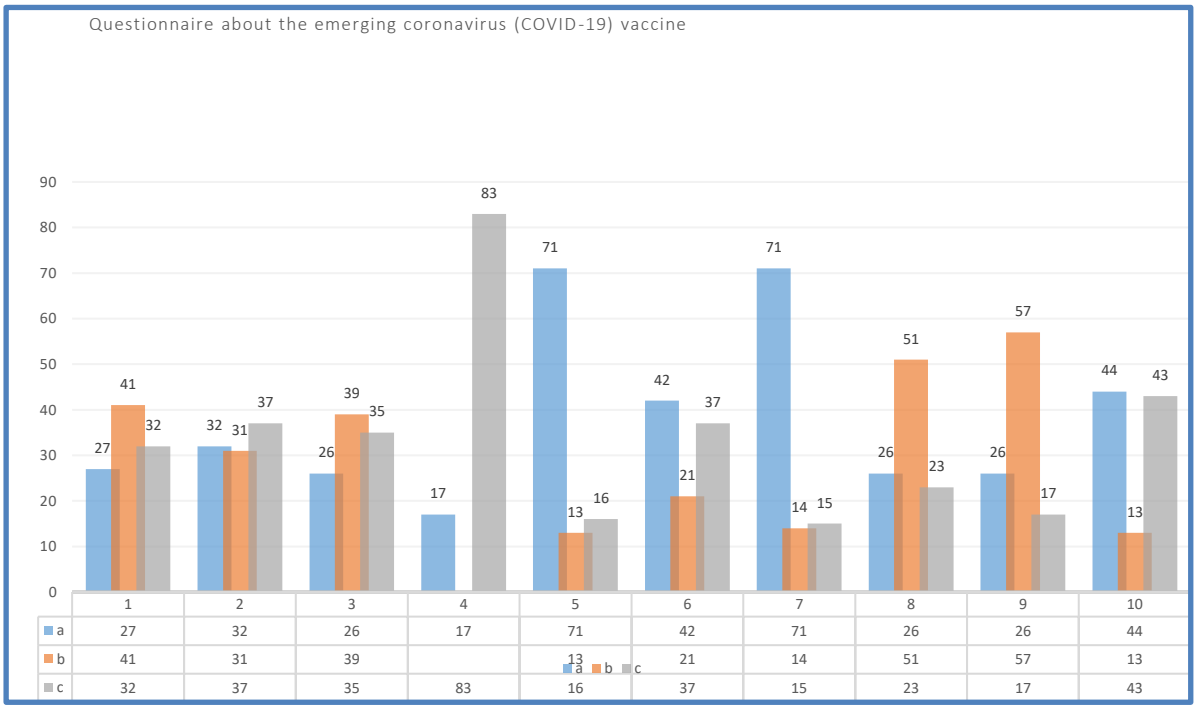

Figure 2: A questionnaire about the emerging coronavirus (Covid-19) vaccine in Iraq, Maysan Governorate

8. Conclusions:

In light of the results of the research, the following can be concluded:

1- The most received vaccine is Pfizer-BioNTech, and Sinopharm by 40%.

2- The largest percentage of those who received the vaccine did not have any fear when they took the vaccine.

3-Most of those who received the vaccine were not forced to do so.

4- 93% of those who took the vaccine advise others to take the vaccine.

5- There is a high level of satisfaction with the performance of the medical staff in the governorate.

6- All those who received the vaccine were not infected after taking the vaccine.

9. Recommendations:

In light of the results and conclusions reached by the researcher, the following recommendations are set:

1- The need to receive one of the vaccines approved by the World Health Organization.

2- Educating the community and disseminating information to ensure that they understand the symptoms and the benefits of receiving the vaccine.

3- Develop counseling programs based on psychological methods that reduce community fears.

10. Future work:

Complementing the findings of the current research, the researchers suggest the following:

1- Conducting broader studies on vaccines (AstraZeneca vaccine, Sinopharm vaccine, Pfizer-BioNTech vaccine) in a way that shows the community more information about these vaccines.

2- Conducting studies that include questionnaires on samples in different countries of those who have taken the vaccine and presenting the results to reliable sources.

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