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Knowledge, Awareness Among General People About Coronavirus Infection and Vaccines Used, Tripoli, Libya

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Abstract:
The severe viral epidemic known as coronavirus disease (COVID-19) continues to spread around the world. The aim of the study: To evaluate the knowledge and awareness among general people about coronavirus causes, transmission, symptoms, treatment, vaccines, and side effects of vaccines in Tripoli, Libya. Method: This study was conducted from August to November in 2024. They were collected from randomly adult participants in Tripoli in Libya. There were many equations asked by the questionnaire that were validated from previous studies. Result: There was a total of 131 participants who received the questionnaire from the researcher from pharmacists. Conclusion: The study's participants knew enough about coronaviruses and their vaccination. Insufficient clinical trials and fear of side effects have raised some doubts regarding the vaccination, despite the participants' satisfaction with its reception. Enough information concerning the immunizations must be made available. To increase public acceptance of vaccines and decrease reluctance, ongoing training and education are required.

Keywords: Coronavirus, general people, coronavirus, awareness, and knowledge.

المعرفة والوعي بين عامة الناس حول عدوى فيروس كورونا واللقاحات المستخدمة، طرابلس، ليبيا

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الملخص
يواصل وباء الفيروس الخطير المعروف بمرض فيروس كورونا (كوفيد-19) انتشاره في جميع أنحاء العالم هدف الدراسة: تقييم المعرفة والوعي بين عامة الناس حول أسباب فيروس كورونا وانتقاله وأعراضه وعلاجه واللقاحات والآثار الجانبية للقاحات في طرابلس، ليبيا الطريقة: أجريت هذه الدراسة من أغسطس إلى نوفمبر عام 2024. تم جمعها من المشاركين البالغين بشكل عشوائي في طرابلس في ليبيا. كان هناك العديد من المعادلات التي طرحها الاستبيان والتي تم التحقق من صحتها من الدراسات السابقة.النتيجة: كان هناك ما مجموعه 131 مشاركًا تلقوا الاستبيان من الباحث من الصيادلة.الاستنتاج: كان المشاركون في الدراسة يعرفون ما يكفي عن فيروسات كورونا وتطعيمهم.أثارت التجارب السريرية غير الكافية والخوف من الآثار الجانبية بعض الشكوك حول التطعيم، على الرغم من رضا المشاركين عن استقباله.يجب توفير معلومات كافية بشأن التطعيمات.لزيادة قبول الجمهور للقاحات وتقليل التردد، هناك حاجة إلى التدريب والتثقيف المستمر.

الكلمات المفتاحية: فيروس كورونا، عامة الناس، فيروس كورونا، الوعي والمعرفة.

Introduction

One of the biggest groups of viruses that may infect people and cause anything from a simple cold to serious illnesses like Middle East Respiratory Syndrome (MERS-CoV) are coronaviruses (CoV) [1]. The severe viral epidemic known as coronavirus disease (COVID-19) continues to spread around the world. In order to flatten the infectivity graph, widespread vaccination is desperately needed, in addition to supportive care and adherence to government regulations. India launched the biggest COVID-19 vaccination campaign in the world on January 16, 2021, with the goal of vaccinating its 900 million people [2].

Devastating morbidity and mortality have been brought on by the coronavirus disease 2019 (COVID-19) pandemic. The necessity for an efficient vaccine is underscored by the fact that the great majority of people on the planet are still vulnerable to COVID-19. In an effort to lessen the growing COVID-19 load, vaccine development has accelerated at a never-before-seen rate [3]. SARS-CoV-2 is the most recent addition to the ever-expanding list of hazardous new agents. The number of people infected with COVID-19 who do not exhibit any symptoms is hard to estimate. Infected people typically experience symptoms like fever, cough, headache, muscle pains, and dyspnoea during the estimated 2–24 day incubation period for COVID-19. Rarely, patients with odd symptoms and indicators, such vomiting and diarrhoea, have been seen. The WHO reported a 3.4% global COVID-19 death rate [4]. The pandemic has caused job losses in a variety of industries and strains the healthcare systems of many nations, with unquantifiable economic consequences [5].

The primary method of COVID-19 transmission is human-to-human contact, such as coughing and sneezing15.20 In addition, respiratory droplets and contact with contaminated secretions on various surfaces might transmit COVID-19.20. There is a higher chance of airborne transmission during large events and gatherings figure1, [6].

Since a lockdown upsets economic conditions in some countries, vaccination may be the best approach to restrict the spread of the pandemic. National and international health organisations are launching campaigns to raise public awareness of the COVID-19 vaccines because of the lack of knowledge among people regarding vaccine types, dosage recommendations, and hygiene practices [8]. A strong anti-vaccine movement with numerous pseudo-scientific conspiracy theories has also overtaken media coverage. These factors suggest that vaccine reluctance could be a significant obstacle to the COVID-19 vaccination program [9].

The majority of the information on the safety and effectiveness of the COVID-19 vaccine has so far been released via manufacturer-funded studies that follow legal requirements and are overseen by other parties.

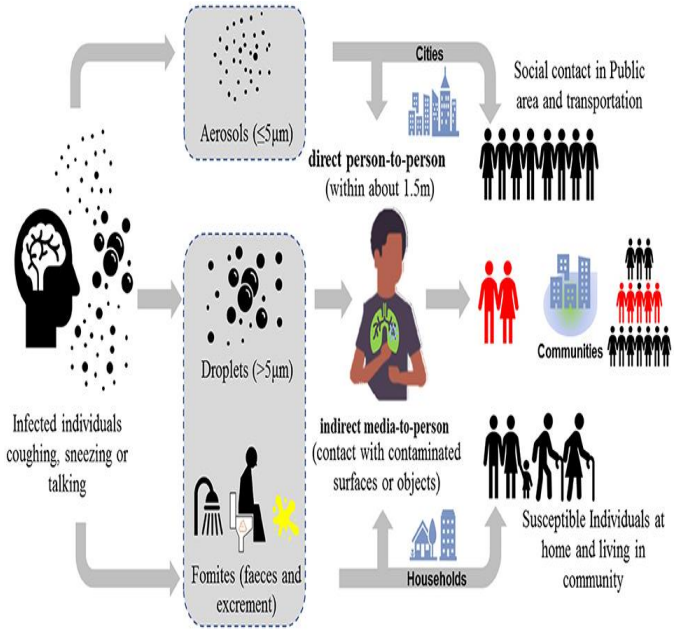

Figure 1: Transmission of corona virus infection [7].

The acceptability of vaccines, which must be accelerated to stop the virus's transmission, may suffer from a lack of independent research on their safety. The adverse effects of a particular vaccine have previously been the

subject of a few studies. However, there are no studies that look at the negative effects of the majority of the licensed COVID-19 vaccines in the literature. Any common or serious adverse effects that follow a COVID-19 vaccination, such as soreness and redness/swelling at the injection site, fever, headache, etc., are referred to here as side effects [10].

The aim of the study:

1. To evaluate the knowledge, awareness of general people about coronavirus causes, transmission, symptoms, and treatment in Tripoli, Libyan.

2. To evaluate the knowledge about vaccines and side effects of vaccines.

Materials and methods:

This study was conducted from August to November in 2024. They were collected from randomly adult participants in Tripoli in Libya. There were many equations asked by the questionnaire that were validated from previous studies. The target number there was 100 participants. There were a total of 131 participants who received the questionnaire from the researcher from pharmacists. All participants answered the equation of the questionnaire.

Data analysis:

The questionnaire was included 15 parts of equations, there were the part one was the demographic data of all participants, the part two was the types of vaccines received by participants, the part three was reasons for choosing specific vaccines, the part four was the experience any side effects after receiving the vaccine, the part five was the reported side effects after vaccination, the part six was the duration of side effects, the part was the impact of symptoms and daily effects, the part eight was the review your doctor's advice about side effects, the part nine was the impact of side effects on the decision to receive a booster dose, the part ten was the impact of side effect information on comfort with vaccination, the part eleven was impact of potential side effects on future vaccination decisions, the part twelve was the visualize the contribution of COVID-19 vaccines in reducing the spread of the virus, the part thirteen was the level of anxiety about COVID-19 vaccination due to misinformation online, the part fourteen was the vaccines 19 level of confidence in available information about COVID, and the part fifteen was the factors affecting vaccine selection.

Results:

131 participants from Tripoli, Libya, answered the questionnaire about COVID-19 and their vaccines. The demographic data of the participants, which included age, gender, and people who received the Corona vaccine, table 1. The majority of participants, 79.4%, were < 18 years old, followed by 13.7% who were 19-30 years old, 3.1% who were 31-50 years old, and 0.8% who were > 50 years old. Most of the participants were female, about 72.5%, and 27.5% were male. People who received the Corona vaccine were 64.9% said yes, and 35.1% said no.

Table 1: Demographic data of all participants

Variables	N(%)
Age:	
< 18	104 (79.4)
19-30	18 (13.7)
31-40	4 (3.1)
40-50	4 (3.1)
>50	1 (0.8)
Gender:	
Female	95 (72.5)
Male	36 (27.5)
People who received the Corona vaccine	
Yes	104 (64.9)
No	27 (35.1)

Table 2 showed the types of vaccines received by participants, which included the participants who received the Sinovac vaccine were 28.2%, AstraZeneca 20.6%, Pfizer-BioNTech 12.2%, Johnson & Johnson was 5.3%, Moderna 2.3%, and Others were 10.7%.

Table 2: Types of vaccines received by participants

Types of Vaccines	N (%)
Sinovac	37 (28.2)
AstraZeneca	27 (20.6)
Pfizer-BioNTech	16 (12.2)
Johnson & Johnson	7 (5.3)
Moderna	3 (2.3)
Others	14 (10.7)
Total	104 (100)

Table 3 showed the reasons for choosing specific vaccines: there was the confidence in the vaccine's efficacy, which was 4.8%; 15.4% were the doctor's recommendation, 8.7% were information based on scientific research, 16.3% were positive experiences from others, 35.6% were ease of access to the vaccine, and 19.2% were mandatory requirements.

Table 3: Reasons for choosing specific vaccines**.**

Reasons	N (%)
Confidence in the vaccine's efficacy	5 (4.8)
Doctor's recommendation	16 (15.4)
Information based on scientific research	9 (8.7)
Positive experiences from others	17 (16.3)
Ease of access to the vaccine	37 (35.6)

Mandatory requirement	20 (19.2)
Total	104 (100)

Table 4 showed the experience of any side effects after receiving the vaccine, to which the response participants said yes, 38.4%, while 61.5% said no.

Table 4: Experience any side effects after receiving the vaccine.

Response	**N (%)**
Yes	40(38.4)
No	64 (61.5)
Total	104 (100)

Table 5 showed the reported side effects after vaccination, 27.5% were gotten pain at the injection site, 39.1% fever, 46.4% fatigue, 34.8% headache, 24.6% muscle or joint pain, 7.2% nausea, 8.7% swelling or redness at the injection site, 5.8% respiratory symptoms, and 20.3% others.

Table 5: Reported side effects after vaccination.

Side effects	**N (%)**
Pain at the injection site	19 (27.5)
Fever	27 (39.1)
Fatigue	32 (46.4)
Headache	24 (34.8)
Muscle or joint pain	17 (24.6)
Nausea	5 (7.2)
Swelling or redness at the injection site	6 (8.7)
Respiratory symptoms (e.g., cough)	4 (5.8)
Other	14 (20.3)
Totally response	69 (100)

Table 6 showed the duration of side effects: 15.5% the duration were less than a day, 40.5% 1-4 days, 6% > 3 days, and 38% did not notice any symptoms.

Table 6: Duration of side effects.

Duration	N (%)
Less than a day	13 (15.5)
1 to 3 days	34 (40.5)
More than 3 days	5 (6)
Did not notice any symptoms	32 (38)
Total	85 (100)

Table 7 showed the impact of symptoms and daily effects: 16.5% of participants were significantly affected, 28.2% slightly affected, and 55.3% did not affect my ability.

Table 7: Impact of Symptoms and Daily Effects.

Impact Level	N (%)
Significantly affected	14 (16.5)
Slightly affected	24 (28.2)
Did not affect my ability	47 (55.3)
Total	85 (100)

Table 8 showed the review of your doctor's advice about side effects: there were 43.5% of participants who had no need to worry; symptoms are normal, 4.35% monitor the condition and symptoms, and 4.3% medication or treatment prescribed.

Table 8: Review your doctor's advice about side effects.

Doctor's Advice	N (%)
No need to worry, symptoms are normal	20 (43.5)
Monitor the condition and symptoms	2 (4.35)
Medication or treatment prescribed	2 (4.3)
Total	46 (100)

Table 9 showed the impact of side effects on the decision to receive a booster dose: 35.5% of participants said yes, I am less likely to receive a booster, 2.6% said yes, I am more likely to receive a booster, and 61.8% said no, my decision has not changed.

Table 9: The impact of side effects on the decision to receive a booster dose.

Response	N (%)
Yes, I am less likely to receive a booster	27 (35.5)
Yes, I am more likely to receive a booster	2 (2.6)
No, my decision has not changed	47 (61.8)
Total	76 (100)

Table 10 showed the impact of side effect information on comfort with vaccination: 11.3% of the participants said yes, it significantly improved my comfort, 31.3% said yes, it slightly improved my comfort, and 57.5% said it had no impact.

Table 10: Impact of side effect information on comfort with vaccination.

Response	N (%)
Yes, it significantly improved my comfort	9 (11.3)
Yes, it slightly improved my comfort	25 (31.3)
No, it had no impact	46 (57.5)
Total	80 (100)

Table 11 showed the impact of potential side effects on future vaccination decisions, with 22.2% saying yes, I have become more hesitant; 28.4% saying they become more cautious; and 57.5% saying no, my stance has not changed.

Table 11: Impact of potential side effects on future vaccination decisions.

Response	N (%)
Yes, I have become more hesitant	18 (22.2)
Yes, I have become more cautious	23 (28.4)
No, my stance has not changed	40 (57.5)
Total	81 (100)

Table 12 showed the visualisation the contribution of COVID-19 vaccines in reducing the spread of the virus: 37.1% said yes, 26.7% said no, and 36.2% said maybe.

Table 12: Visualize the contribution of COVID-19 vaccines in reducing the spread of the virus.

Response	N (%)
Yes	43 (37.1)
No	31 (26.7)
Maybe	42 (36.2)
Total	116 (100)

Table 13 showed the level of anxiety about COVID-19 vaccination due to misinformation online: 33.1% with a low level, 42.4% moderate, and 24.6% high.

Table 13: Level of anxiety about COVID-19 vaccination due to misinformation online.

Level of Concern	N (%)
Low	39 (33.1)
Moderate	50 (42.4)
High	29 (24.6)
Total	118 (100)

Table 14 showed the vaccines 19-level confidence in available information about COVID: 12.6% with high trust, 37.8% with medium trust, 19.3% with low trust, and 30.3% with no trust at all.

Table 14: Vaccines 19 level of confidence in available information about COVID**.**

Level of Trust	N (%)
High Trust	15 (12.6)
Medium Trust	45 (37.8)
Low Trust	23 (19.3)
No Trust at All	36 (30.3)
Total	119 (100)

Table 15 showed the factors affecting vaccine selection: 30% were effectiveness, 48.3% were safety, 13.3% were availability, 27.5% were recommendations by health authorities, 26.7% were experiences of people close to you, and 7.5% were others.

Table 15: Factors affecting vaccine selection.

Factor	N (%)
Effectiveness	36 (30)
Safety	58 (48.3)
Availability	16 (13.3)
Recommendations by health authorities	33 (27.5)
Experiences of people close to you	32 (26.7)
Other	9 (7.5)
Total	120 (100)

Discussion

All the participants of this study were from Tripoli, Libya. The most participants were female, more than male, with ages < 18 to 30 years old. These participants were well-came to participate with our research. They received about 64.9% of participants the corona vaccines. The participants were the most of the type of vaccines used: Sinovac vaccine, which was 28.2%; AstraZeneca, 20.6%; and Pfizer-BioNTech, 12.2%, figure 1. Because the doctor's recommendation was based on scientific research, there were positive experiences from others, there was ease of access to the vaccine, and there were mandatory requirements.

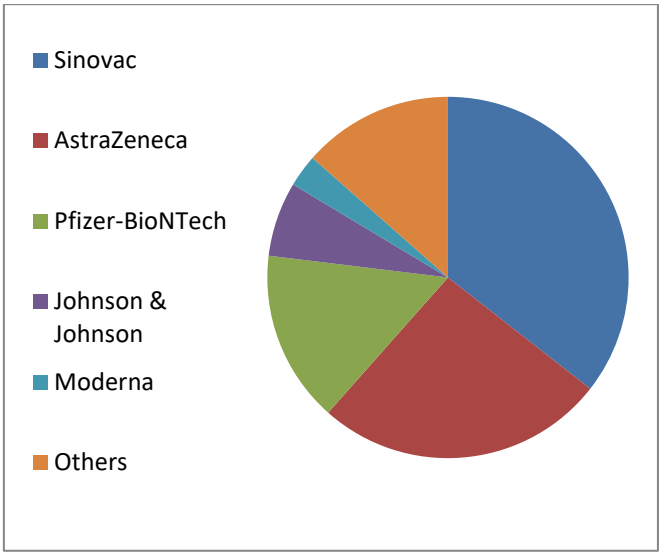

Figure 1: Types of corona vaccines used

The experience of any side effects after receiving the vaccine, to which the response participants were about 38.4%, the reported side effects after vaccination, with the duration of side effects being some days or less.

This was also due to the fact that numerous researchers, manufacturers, and scientists were already creating cutting-edge technological platforms for novel vaccines, which were later modified for the prevention of COVID-19. However, the rapid development coupled with the short post-vaccination follow-up period and the lack of knowledge regarding the vaccines' long-term side effects raised serious concerns about the safety profile of the

currently available vaccines because no coronavirus vaccine had previously been licensed and approved for use in humans [11]. Several authors have shown that administering a booster dosage after a specific amount of time can stimulate the humoral immune response against SARS-CoV-2, increasing the efficacy or effectiveness of vaccinations against the volatile organic compound [12].

This study for the impact of side effect information on comfort with vaccination showed slightly improved comfort and had no impact. The adverse effect pattern following each dose is consistent with earlier findings49. Instead of a direct immunological reaction, this might be explained by the second dose's cumulative immunological effect. With many vaccine types, we found that the frequency of adverse events (AEs) following the second dosage was lower than that following the first dose. However, we found that the Sputnik V vaccination increased the frequency of adverse events (AEs), the Sinopharm vaccine increased local AEs, the Pfizer-BioNTech vaccine increased systemic AEs, and the Johnson & Johnson (J&J) vaccine increased serious AEs. Prior research has revealed varying patterns, with increased local and systemic adverse events following the second dosage of the Pfizer-BioNTech and AstraZeneca vaccines [13].

This study visualized the contribution of COVID-19 vaccines in reducing the spread of the virus; there is moderate visualization because most of the participants are moderately anxious about COVID-19 vaccination due to misinformation online. Crucially, this is also a great advantage when dealing with viruses that are changeable and frequently change since it enables quick modifications to the vaccine's composition to reflect strains that are currently in circulation. It became evident that an updated vaccine would probably be helpful when the Omicron version appeared in November 2021. Updated versions, including monovalent and bivalent vaccinations, were being developed by Pfizer/BioNTech and Moderna. Although the actual vaccine might have been updated much more quickly, clinical studies had to be conducted first, and the results were not ready until late spring or early summer of 2022 [14].

Although millions of people have been vaccinated worldwide, there is an absence of data comparing the B and T cell responses of all the vaccinations. Since the processing and presentation of B or T cell epitopes may differ from those of naturally infected patients, it is crucial to do epitope mappings of antibodies produced from vaccinations vs convalescence sera. As of yet, there is also a paucity of immunological correlates for the protection against COVID-19, making the titre of neutralizing antibodies equivocal. Large data sets are therefore needed to forecast the vaccine's protection, which means that a considerable period of time remains until a definitive evaluation of the COVID-19 vaccinations' effectiveness can be produced [15].

Conclusion

The study's participants knew enough about coronaviruses and their vaccination. Insufficient clinical trials and fear of side effects have raised some doubts regarding the vaccination, despite the participants' satisfaction with its reception. Enough information concerning the immunizations must be made available. To increase public acceptance of vaccines and decrease reluctance, ongoing training and education are required.

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Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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