DOI:10.31557/EJHC.2022.2.1.5

RESEARCH ARTICLE

Attitude Towards COVID-19 Vaccination among Nurses Working in UAE

Abdalrahman Al Tamimi[1], Hussam Al Nusair[2], Nabeel Al Yateem[3], Hanaa Ayesh[4], Shyna Noronha[4], Deepthy Dinesh[4]

[1]Nursing Department, University Hospital, Sharjah, United Arab Emirates. [2]Sheikh Khalifa General Hospital, UmmAlquwain, United Arab Emirates. [3]College of Health Sciences, University of Sharjah. [4]University Hospital, Sharjah.

Abstract

Background: The world is in the midst of a COVID-19 pandemic. COVID-19 vaccine has been framed as the ultimate solution needed to end the pandemic. Its success has been challenged by individuals who choose to delay or refuse vaccines. Healthcare professional's intention to use and to recommend the vaccine to their patients is pivotal to the uptake of vaccines by the public and the success of vaccination campaigns, this mater highly depends on their acceptability of vaccines and attitudes towards it in the first place. **Objectives:** The study assessed the acceptability of and the attitude towards COVID-19 vaccine among nurses in UAE hospitals. The study also identified the reasons for COVID-19 vaccination rejection and the association between vaccination acceptability and selected variables like gender, years of experience and presence of comorbidities. **Study design:** Cross sectional design. Acceptance of COVID-19 vaccination and the attitude towards COVID-19 vaccination was assessed using pre-validated checklist among nurses in various hospitals across UAE. **Results:** Among 607 nurses, despite the availability of COVID-19 vaccines, only approximately 79 % of the nurses in the current study accepted to get COVID-19 vaccines. Also, only 36.7% of the nurses who participated in the study had positive attitude towards COVID-19 vaccination during the study period (February – April 2021). **Conclusion:** While healthcare professionals are expected to practice based on scientific evidence and guide their patients accordingly, proportion of them seems to be affected by misleading non-scientific social media information. Correction measures such as scientific educational programs Should be implemented to re educate healthcare professionals about the importance of following and practicing in an evidence informed approach.

Keywords: COVID-19 vaccination- nurses -UAE

East J Healthc, **2 (1)**, 5-11

Submission Date: 12/06/2021 Acceptance Date: 12/28/2021

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus [1]. Health workers are central to the COVID-19 pandemic response, providing care to patients amidst a very high risk and uncertain environment, extending their working hours and in new work environment, implementing new treatment protocols and guidelines, caring for their patients to get them back to health while risking their own health, and balancing additional service delivery needs while preserving access to essential health services [2]. Health professionals has also played a key role in the vaccination campaigns that has been initiated on a global scale, both by educating the public about the new vaccines and its importance and also by the actual administration of the vaccines. Public looked very high to health professionals due to their professional and vital role in these critical situations, they also were taking all their advices and recommendations carefully and seriously to protect their health from the danger of the pandemic. It was noted during these campaigns the impact that healthcare professionals had in the uptake of vaccine from the public. Healthcare professional's intention to use and to recommend the vaccine to their patients has been observed to be pivotal to the uptake of the vaccine and the success

Corresponding Author:
Dr. Nabeel Al-Yateem
Associate professor, College of Health Sciences, University of Sharjah.
Email: nabeelyateem@gmail.com

of the vaccination campaigns. This issue however, depends on the first place on their acceptability of vaccines and their attitudes towards it. It is well reported that healthcare professionals who have an unfavorable attitude, aversion or hesitation towards vaccinations transmit these hostile attitudes to vaccination to patients and tend to recommend vaccination less frequently [3].

Patients often trust and rely on healthcare professionals for information about vaccines and vaccine-preventable diseases, as well as the therapeutic and public health benefits associated with immunization [4]. Maintaining confidence in vaccination highly depends on the interaction between patients and providers [5,6]. Attitude and utilization of vaccination by healthcare professionals is a major factor that is consistently associated with patient acceptance and vaccination, adherence to vaccination schedules, and reduced hesitation/aversion [7].

United Arab Emirate has been a leader and pioneer in the development of the COVID-19 vaccination and in pushing the international efforts to vaccination to speed up recovery and return people and countries to semi normal life. The country hosted and lead the clinical trials for one of the leading vaccines worldwide (CINOPHARM), launched a massive vaccination campaign locally and regionally and also donated free vaccines to other countries. During these activities the positive role of the healthcare professionals was eminent and noticeable, however some negative roles were noticed among those healthcare professionals did not held themselves a positive attitude toward the new vaccines and consequently had a negative effect on the public. The healthcare system in UAE is almost entirely composed from overseas healthcare professionals coming from different, healthcare systems, with different educational and experiential backgrounds and also holding a various cultural and religious beliefs [8]. The UAE population is similarly diverse, making the country more vulnerable to the wrong misconceptions about health-related issues and exposed to potential effects of these inaccurate and none evidence-based information's and attitudes that can be adopted and spread by minority of the healthcare professionals and the whole population. Therefore, exploring the healthcare professional's knowledge, attitudes and beliefs in different areas that are subject to the effect of culture, religion and educational preparation are extremely important. These factors for example has been found to affect the healthcare professionals practices in the areas of mental health [9-11] and also the evidence based practice [12, 13]. Beliefs about vaccinations is also an area that can be affected by the culture, religion and educational preparation of the healthcare professionals, and it is an important factor in the success of the country efforts to reach its goal in protecting the population from the COVID-19 risk, therefore this area is important area for exploration. This study therefore to assessed the acceptability of and the attitude towards COVID-19 vaccine among nurses in UAE hospitals. The study also identified the reasons for COVID-19 vaccination rejection and the association between vaccination acceptability and selected variables like gender, years of experience and presence of comorbidities.

Study aim

The purpose of this study is to assess the acceptability of COVID-19 vaccination, to find out the reasons for vaccination rejection and the attitude towards COVID-19 vaccination across the nurses in various hospitals of UAE.

Materials and Methods

Design and Setting

A quantitative cross-sectional study was conducted in various Hospitals in UAE (Government and private) using self-administered online questionnaire.

Research Ethics

Approval for this study was obtained from the UOS Research Ethics Committee (UHS-HERC-044-09022021).

Sample Size

Given a 5% margin of error, 95% confidence level, and an estimated population size of 30000 nurse in UAE. The required sample size for this study was estimated to be 380 participants. However, the study tried to achieve as much sample size as possible acknowledging the difficult times the nurses was going through and their potential inability to spare some time to participate in research studies. All the nurses who would be eligible to participate in the study were included. A total of 607 staffs participated in the study from various hospitals across UAE.

Data Collection Tools

The study instrument was a self-administered questionnaire, which was constructed after a thorough literature review. The instrument was divided into the following two sections:

Questionnaire to Assess the Demographic Data and Acceptancy of COVID-19 vaccination in which the participants were asked to report their age, gender, marital status, any comorbidities, years of working experience, department of work, previous exposure to COVID-19 virus either by infection or by taking care of COVID-19 infected patients, and a direct question to assess their acceptance to get vaccinated with COVID-19 vaccine and the reason for vaccine rejection if any.

Attitudes Towards COVID-19 Vaccination Scale consisted of 10 items (six positively worded and 4 negatively worded items) on five-point agreement scales (from 1 "Strongly disagree" to 5 "Strongly agree"). Reverse coding was applied for negatively worded statements. Scores from 10 to 23 was considered as a negative attitude, from 24 to 36 as moderate, and from 37 to 50 as positive.

Content validity was ensured by getting the feedback from five experts. Expert opinions on the importance and relevance of the questionnaire content were considered before the final version was distributed and the reliability was established by administering the tool to 20 nurses.

Data Collection Process

Data collection was done from February to April 2021. Permission was taken from the director of nursing from various hospitals across UAE to conduct the research among the nurses.

Initially, the study investigators shared the survey link to the concerned directors of nursing which was then circulated among the nurses using intra facility communication portals and social media platforms. On receiving and clicking the link, participants got auto directed to the informed consent page, followed by the survey questionnaires. Two reminders were sent afterwards to nurses to encourage them to complete the survey.

Data Analysis

Data analysis was done using descriptive and inferential statistics: descriptive statistics was used to describe participant demographic variables and the study variables. Chi Squared test was used to assess the associations between the study variables.

Results

Demographic data of participants

A total of 607 nurses completed the online survey. All of them provided the informed consent and completed the survey. Table 1 shows the summary demographic data of the study participants. Most of the respondents 390 out of 607 (64.3%) were aged between 31 and 40 years, followed by 105 (17.3%) aged 21-30 years. Out of the 607 participants, 506 (83.4%) were female, 440 (72.5%) were married, majority 528 (87%) of the study participants didn't have any kind of comorbidities.

31.8% (n=193) out of 607 participants has 6-10 years of experience, followed by 30.2% (n=183) has 11-15 years of experience. Participants were multi-nationals; however, majority came from Philippines (237 -39%) and India (196-32.3%). Out of all participants, 19.1% (n=108) were working in Out Patients Department, Adult Critical Care (n=104; 18.4%) and Medical Surgical ward (98; 17.3%). Majority of the participants (n=435; 71.6%) were not infected with COVID-19 at any point of time and most of them (n=496; 82%) had given direct care of COVID-19 patients.

In terms of acceptability of nurses to get vaccinated with COVID-19 vaccine, out of the 607 nurses who participated in the study, 479 (79%) of them indicated acceptance of COVID-19 vaccine and almost a quarter of the participants (n=128; 21%) either refused to get vaccinated against COVID-19 or were not sure about whether to get vaccinated against COVID-19 or not.

For the overall attitude of participants toward COVID19 vaccine, out of 607 participants, only 36.7% (n=223) had positive attitude while 63.3% (n=384) participants had either moderate or negative attitude towards COVID-19 vaccination.

Table 2 and 3 shows the significant Association between attitudes towards vaccine and acceptability of vaccine and other demographic variables. Our study revealed that there is significant association between vaccine acceptability and attitude and selected variables such as age, nationality and department of work.

This survey revealed a significant association between age and acceptability (X^2 Sig=0.042) and attitude (X^2 Sig=0.017) towards COVID-19 vaccination. As the age increases the acceptability seems to increase also, similar pattern can be seen in relation to the attitude.

In relation to the association between nationality and acceptability and attitude towards COVID-19 vaccination. Filipino and Indians nurses seems to have accepted COVID-19 vaccination more than the other nationalities (X^2 Sig=0.002), the same two nationalities had also more positive attitude towards the vaccination (X^2 Sig < 0.001).

Finally, the data indicated that there is a significant association between department of work and acceptance and attitude towards COVID-19 vaccination. Operation theatre department and OPD nurses has shown significantly more acceptance to vaccination and also more positive attitude toward it (X^2 Sig < 0.001).

Discussion

Nurse's acceptability and attitude towards COVID-19 vaccine play an important role in the general population's vaccination acceptability as nurses are often the advocates for health-related interventions. vaccine hesitancy observed in the general population has been consistently linked to the level of vaccine hesitancy among health care providers [14].

This study acts as a guide to the authorities to enable them to maximize acceptance of COVID-19 vaccination among nurses and to take interventions to change their negative attitude towards COVID-19 vaccination. The literature review proves that many studies have been conducted on acceptance and attitude of health care providers towards COVID-19 vaccination [15-17].

A major strength of our study is that the study is conducted among nurses who are on the frontline in fighting against COVID-19 Pandemic. Their acceptance and attitude towards COVID-19 vaccination play a major role in influencing the vaccination behavior of the general population. Our study, with a representative sample size across the county demonstrated the nurse's acceptability to take the COVID-19 vaccine, attitude towards it and the factors for vaccination hesitancy and negative attitude towards COVID-19 vaccination.

In this study, only 79% of the participants indicated acceptance of COVID-19 vaccine even though the vaccine is available and its importance is well known. Almost a quarter of the participants (21%) either refused to get vaccinated against COVID-19 or were not sure about whether to get vaccinated against COVID-19 or not. Our results agree with the studies conducted in France and French speaking parts of Belgium and Canada [17]. This also agreed with Barry et al, who carried out a study to assess COVID-19 vaccine confidence in a MERS-CoV experienced nation (Saudi Arabia) and found that two-thirds of HCWs expressed willingness to receive a potential COVID-19 vaccine [18]. The average rate of

Table 1. Demographics of Participants (n=607)

		Count (%)
1. Age	21 - 30	105 (17.3)
	31 - 40	390 (64.3)
	41 - 50	98 (16.1)
	Above 50	14 (2.3)
2. Gender	Female	506 (83.4)
	Male	101 (16.6)
3. Marital status	Married	440 (72.5)
	Unmarried / Widowed	153 (25.2)
	Separated	14 (2.3)
4. Comorbidities	No	528 (87.0)
	Yes	79 (13.0)
5. Years of working experience:	1 - 5 Years	106 (17.5)
	6 - 10 Years	193 (31.8)
	11 - 15 Years	183 (30.2)
	16 - 20 Years	83 (13.7)
	More than 20	41 (6.8)
6. Nationality	Indian	196 (32.3)
	Jordanian	47 (7.7)
	Filipino	237 (39.0)
	Egyptian	21 (3.5)
	Emirati	5 (0.8)
	Others	101 (16.5)
7. Department	Emergency Department	93 (16.4)
	Operation Theatres	34 (6.0)
	Out Patients Department	108 (19.1)
	Adult Critical Care	104 (18.4)
	Other department	44 (7.8)
	Administration	22 (3.9)
	Medical Surgical	98 (17.3)
	Maternity ward	29 (5.1)
	Pediatric Ward and Neonatal ICU	34 (6.1)
8. Have you ever got infected with COVID-19?	Yes	118 (19.4)
	No	435 (71.6)
	I don't Know	54 (9)
9. Have you ever given direct care of COVID-19 patients?	Yes	496 (82)
	No	110 (18)
10. I am willing to get vaccinated with COVID-19 vaccine?		
	Yes	479 (79)
	No	51 (8)
	Not Sure	77 (13)

acceptance in our results is higher than for an online survey conducted in Saudi Arabia, in which the overall rate of acceptance for a newly developed COVID-19 vaccine among healthcare providers was above average (56%) [19]. Also the vaccination acceptance among health care providers in our study is much higher when compared with the vaccination acceptance of health care workers in a study conducted in Egypt, where in only 21% of Egyptian healthcare workers accepted the COVID-19 vaccination [20].

The major concerning factor for vaccine rejection reflected in our study were the vaccine safety and side effects, which is consistent with the study findings from similar studies done in KSA [21] USA [22], Australia [23] and Turkey [24]. The study also found that the believes like incomplete vaccine trials and the chance of getting COVID infection even after taking vaccine were also contributing to vaccination hesitancy.

We suggest that the healthcare service managers should support laws that mandate COVID-19 vaccination if possible and acceptable, and to support more research on behavioral and social determinants of vaccination and

Table 2. Association between Attitudes Towards Vaccine and Acceptability of Vaccine and other Demographic Variables

	Acceptability (X^2 sig)	Attitudes (X^2 sig)
Age	0.042*	0.017*
Gender	0.106	0.677
Marital status	0.375	0.255
Comorbidities	0.304	0.465
Experience	0.242	0.153
Nationality	0.002*	< 0.001*
Department	< 0.001*	< 0.001*
Have you ever got infected with COVID-19	0.315	0.1
Have you ever given direct care to COVID-19 patients	0.947	0.388

* Significant association

then to address each of the factors to take interventions to improve vaccination acceptability.

For the overall attitude of participants toward COVID-19 vaccine, only 36.7% had positive attitude which is really alarming while 63.3% participants had either moderate or negative attitude towards COVID-19 vaccination. The study results are similar to the results of a cross sectional study conducted in in Jordan and Kuwait among other Arab Countries, which states if a COVID-19 vaccine was available, only 29.4% of the respondents in the survey stated that they would get vaccinated [25].

We identified several factors associated with a negative attitude towards COVID-19 vaccination, including negative information in media about the safety of vaccination, perception that new vaccines carry more risks than older vaccines and COVID-19 vaccine is not needed if all protective measures are taken. Our findings agree with the above-mentioned study which states that a reliance on social media as the main source of information about COVID-19 vaccines was associated with vaccine hesitancy [20]. It is then extremely important to educate the public and also the healthcare professionals to receive information from trusted sources and at the same time to widely disseminate reliable, transparent and accurate vaccine information to public and healthcare professionals through all available channels and means to improve the attitude towards COVID-19 vaccine.

This survey revealed a significant association between age and acceptability and attitude towards COVID-19 vaccination, which is similar to the result of the study

Table 3. Attitudes and Acceptability of Vaccine Per Demographic Attribute

		Acceptability						Attitudes					
		Yes		Not sure		No		Negative		Moderate		Positive	
		Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Age	21 - 30	70	67	23	22	12	11	9	9	64	61	32	30
	31 - 40	317	81	41	11	32	8	7	2	240	62	143	37
	41 - 50	80	82	12	12	6	6	4	4	52	53	42	43
	Above 50	12	86	1	7	1	7	0	0	8	57	6	43
Nationality	Indian	160	82	24	12	12	6	1	1	103	53	92	47
	Jordanian	37	79	7	15	3	6	3	6	28	60	16	34
	Filipino	195	82	28	12	14	6	5	2	155	65	77	32
	Egyptian	14	67	4	19	3	14	1	5	15	71	5	24
	Emirati	2	40	2	40	1	20	0	0	3	60	2	40
	Others	71	70	12	12	18	18	10	10	60	59	31	31
Department	Emergency Department	71	76	4	4	18	19	3	3	54	58	36	39
	Operation Theatres	33	97	1	3	0	0	0	0	18	53	16	47
	Out Patients Department	93	86	11	10	4	4	2	2	58	54	48	44
	Adult Critical Care	70	67	27	26	7	7	6	6	62	60	36	35
	Other departments	31	70	9	20	4	9	2	5	32	73	10	23
	Administration	13	59	2	9	7	32	6	27	12	55	4	18
	Medical Surgical	81	83	13	13	4	4	1	1	64	65	33	34
	Maternity ward	22	76	4	14	3	10	0	0	20	69	9	31
	Paediatric Ward & Neonatal ICU	28	82	3	9	3	9	0	0	18	53	16	47

conducted in US, which states vaccine acceptance increased with increasing age, education, and income level [26]. As the age increases the acceptability seems to increase as well as more positive attitude is reflected among them. This may be because older people are more at risk to get infected and therefore more likely to accept the vaccine. Older age was associated with higher rates of vaccine acceptance in another study done on acceptability of COVID-19 Vaccination among Greek Health Professionals [27]. Therefore, maybe future interventions to improve acceptance and attitudes to vaccines might focus more on the younger group of healthcare professionals.

In relation to the association between nationality and acceptability and attitude towards COVID-19 vaccination, Filipino and Indians nurses seems to have accepted COVID-19 vaccination more than the other nationalities the same two nationalities had also more positive attitude towards the vaccination. This could be due to the demographics of participants in this study, where the majority of participants in the present study belonged to those nationalities. It could be also related to particular academic preparation or other issue. Further investigation of this issue is worthy.

Since the confidence and hesitancy of HCWs to vaccines are crucial factors in their likelihood of being advocates to vaccinating their patients, this and other similar studies highlight the need for more education and improvement in vaccine confidence among HCW [28]. Therefore, we recommend that the authorities need to take necessary measures to achieve higher vaccination acceptance and encourage positive attitude toward COVID-19 vaccination.

More educational awareness to be done to nurses, individual and group counselling also is recommended for those nurses who have hesitant attitude towards vaccination. Also, we suggest to facilitate vaccination campaigns to the front-line health workers to improve the rate of vaccination among them, once vaccinated and experience the benefits of vaccination, then they may be better advocates for the vaccination to public.

Study Limitations

Our study has some limitations: the study responses were recorded using a web-based self- administered survey, instead of a direct face-to-face interview. This may lead to potential bias in reporting their responses and the depth of knowledge gained. Also, convenient sampling method was used, which may not represent the true picture of study participants. However, during this pandemic, this safe and effective method the data from the study participants.

In conclusion, the world is in the midst of a COVID-19 pandemic. COVID-19 vaccine has been framed as the ultimate solution needed to end the pandemic. Despite the availability of COVID-19 vaccines, only approximately 79 % of the nurses in the current study accepted to get COVID-19 vaccines.

Also, only 36.7% of the nurses who participated in the study had positive attitude towards COVID-19 vaccination which could make a serious impact on the preventive measures aimed at controlling the pandemic as patients often trust and rely on healthcare professionals for information about vaccines and vaccine-preventable diseases.

The major intervention that could increase the acceptance and improve the attitude among nurses will be to deliver scientific and accurate information about the available vaccines. The current study provides the authorities with deep insights into the factors for vaccination hesitancy and negative attitude among nurses, its impact and the solutions to overcome those barriers.

For acceptability of vaccination against COVID-19, education among HCWs is crucial because health professional's attitude about vaccines is an important determinant of their own vaccine uptake and their likelihood of recommending the vaccine to their patients.

Additional research questions can be explored, including vaccine promotion strategies, experimental studies like effectiveness of educational framework or individual/group counselling program to improve the acceptability of COVID /attitude towards COVID-19 vaccination among nurses. Similar studies can be conducted targeting all the health care professionals with increased number of samples.

References

1. https://www.who.int/health-topics/coronavirus#tab=tab_1.
2. https://www.who.int/teams/risk-communication/health-workers-and-administrators.
3. Arda B, Durusoy R, Yamazhan T, Sipahi OR, Taşbakan M, Pullukçu H, Erdem E, Ulusoy S. Did the pandemic have an impact on influenza vaccination attitude? a survey among health care workers. BMC Infectious Diseases. 2011 04 07;11(1):87. https://doi.org/10.1186/1471-2334-11-87
4. Kabamba Nzaji M, Kabamba Ngombe L, Ngoie Mwamba G, Banza Ndala DB, Mbidi Miema J, Luhata Lungoyo C, Lora Mwimba B, Cikomola Mwana Bene A, Mukamba Musenga E. Acceptability of Vaccination Against COVID-19 Among Healthcare Workers in the Democratic Republic of the Congo. Pragmatic and Observational Research. 2020;11:103-109. https://doi.org/10.2147/POR.S271096
5. Leask J, Kinnersley P, Jackson C, Cheater G, Bedford H, Rowles G. Communicating with parents about vaccination: a framework for health professionals. BMC Pediatr. 2012;12(1). https://doi.org/10.1186/1471-2431-12-154 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
6. Schmitt H, Booy R, Aston R, Van Damme P, Schumacher RF, Campins M, Rodrigo C, Heikkinen T, Weil-Olivier C, Finn A, Olcén P, Fedson D, Peltola H. How to optimise the coverage rate of infant and adult immunisations in Europe. BMC Medicine. 2007 05 29;5(1):11. https://doi.org/10.1186/1741-7015-5-11
7. Asma S, Akan H, Uysal Y, Poçan AG, Sucaklı MH, Yengil E, Gereklioğlu Ç, Korur A, Başhan İ, Erdogan AF, Özşahin AK, Kut A. Factors effecting influenza vaccination uptake among health care workers: a multi-center cross-sectional study. BMC infectious diseases. 2016 05 04;16:192. https://doi.org/10.1186/s12879-016-1528-9
8. Al-Yateem N, Almarzouqi A, Dias JM, Saifan A, Timmins F. Nursing in the United Arab Emirates: Current challenges and opportunities. Journal of Nursing Management. 2021 03;29(2):109-112. https://doi.org/10.1111/jonm.12984

9. Slewa-Younan S, Nguyen TP, Al-Yateem N, Rossiter RC, Robb W. Causes and risk factors for common mental illnesses: the beliefs of paediatric hospital staff in the United Arab Emirates. International Journal of Mental Health Systems. 2020;14:35. https://doi.org/10.1186/s13033-020-00367-6
10. Al-Yateem N, Rossiter RC, Robb WF, Slewa-Younan S. Mental health literacy of school nurses in the United Arab Emirates. International Journal of Mental Health Systems. 2018;12:6. https://doi.org/10.1186/s13033-018-0184-4
11. Al-Yateem N, Rossiter R, Robb W, Ahmad A, Elhalik MS, Albloshi S, Slewa-Younan S. Mental health literacy among pediatric hospital staff in the United Arab Emirates. BMC psychiatry. 2017 Dec 08;17(1):390. https://doi.org/10.1186/s12888-017-1556-z
12. Al-Yateem N, Griffiths J, McCreaddie M, Robertson-Malt S, Kuzemski D, Mathew Anthony J, Fielding M, Al Khatib F, Macaulay Sojka E, Jean Williams J. A National Scoping Study on Barriers to Conducting and Using Research Among Nurses in the United Arab Emirates. Policy, Politics & Nursing Practice. 2019 Nov;20(4):216-227. https://doi.org/10.1177/1527154419876264
13. McCreaddie M, Kuzemski D, Griffiths J, Sojka EM, Fielding M, Al Yateem N, Williams JJ. Developing nursing research in the United Arab Emirates: a narrative review. International Nursing Review. 2018 03;65(1):93-101. https://doi.org/10.1111/inr.12405
14. Naz H, Cevik F, Aykın N. Original Article Influenza Vaccination in Healthcare Workers. 2006. [Google Scholar].
15. Wang J, Jing R, Lai X, Zhang H, Lyu Y, Knoll MD, Fang H. Acceptance of COVID-19 Vaccination during the COVID-19 Pandemic in China. Vaccines. 2020 08 27;8(3):E482. https://doi.org/10.3390/vaccines8030482
16. Bhagavathula AS, Aldhaleei WA, Rahmani J, Mahabadi MA, Bandari DK. Knowledge and Perceptions of COVID-19 Among Health Care Workers: Cross-Sectional Study. JMIR public health and surveillance. 2020 04 30;6(2):e19160. https://doi.org/10.2196/19160
17. Verger P, Scronias D, Dauby N, Adedzi KA, Gobert C, Bergeat M, Gagneur A, Dubé E. Attitudes of healthcare workers towards COVID-19 vaccination: a survey in France and French-speaking parts of Belgium and Canada, 2020. Euro Surveillance: Bulletin Europeen Sur Les Maladies Transmissibles = European Communicable Disease Bulletin. 2021 01;26(3). https://doi.org/10.2807/1560-7917.ES.2021.26.3.2002047
18. Barry M, Temsah M, Alhuzaimi A, et al. COVID-19 vaccine confidence and hesitancy among healthcare workers: a cross-sectional survey from a MERS-CoV experienced nation. bioRxiv. Published online 2020;. https://doi.org/10.1101/2020.12.09.20246447
19. Ahmed G, Almoosa Z, Mohamed D, Rapal J, Minguez O, Abu Khurma I, Alnems A, Al Mutair A. Healthcare Provider Attitudes toward the Newly Developed COVID-19 Vaccine: Cross-Sectional Study. Nursing Reports. 2021 03;11(1):187-194. https://doi.org/10.3390/nursrep11010018
20. Fares S, Elmnyer MM, Mohamed SS, Elsayed R. COVID-19 Vaccination Perception and Attitude among Healthcare Workers in Egypt. Journal of Primary Care & Community Health. 2021 Dec;12:21501327211013303. https://doi.org/10.1177/21501327211013303
21. Qattan AMN, Alshareef N, Alsharqi O, Al Rahahleh N, Chirwa GC, Al-Hanawi MK. Acceptability of a COVID-19 Vaccine Among Healthcare Workers in the Kingdom of Saudi Arabia. Frontiers in Medicine. 2021;8:644300. https://doi.org/10.3389/fmed.2021.644300
22. Daly M, Robinson E. Willingness to vaccinate against COVID-19 in the US: Longitudinal evidence from a nationally representative sample of adults from April-October 2020. medRxiv: The Preprint Server for Health Sciences. 2020 Nov 30;:2020.11.27.20239970. https://doi.org/10.1101/2020.11.27.20239970
23. Dodd RH, Cvejic E, Bonner C, Pickles K, McCaffery KJ. Willingness to vaccinate against COVID-19 in Australia. The Lancet. Infectious Diseases. 2021 03;21(3):318-319. https://doi.org/10.1016/S1473-3099(20)30559-4
24. Ozisik L, Tanriover MD, Altınel S, Unal S. Vaccinating healthcare workers: Level of implementation, barriers and proposal for evidence-based policies in Turkey. Human Vaccines & Immunotherapeutics. 2017 05 04;13(5):1198-1206. https://doi.org/10.1080/21645515.2016.1269992
25. Sallam M, Dababseh D, Eid H, Al-Mahzoum K, Al-Haidar A, Taim D, Yaseen A, Ababneh NA, Bakri FG, Mahafzah A. High Rates of COVID-19 Vaccine Hesitancy and Its Association with Conspiracy Beliefs: A Study in Jordan and Kuwait among Other Arab Countries. Vaccines. 2021 01 12;9(1):42. https://doi.org/10.3390/vaccines9010042
26. Shekhar R, Sheikh AB, Upadhyay S, Singh M, Kottewar S, Mir H, Barrett E, Pal S. COVID-19 Vaccine Acceptance among Health Care Workers in the United States. Vaccines. 2021 02 03;9(2):119. https://doi.org/10.3390/vaccines9020119
27. Papagiannis D, Rachiotis G, Malli F, Papathanasiou IV, Kotsiou O, Fradelos EC, Giannakopoulos K, Gourgoulianis KI. Acceptability of COVID-19 Vaccination among Greek Health Professionals. Vaccines. 2021 03;9(3):200. https://doi.org/10.3390/vaccines9030200
28. Goodman JL, Grabenstein JD, Braun MM. Answering Key Questions About COVID-19 Vaccines. JAMA. 2020 Nov 24;324(20):2027-2028. https://doi.org/10.1001/jama.2020.20590