ORIGINAL ARTICLE

Nursing Students' Perception of Wearing Mask and Taking Coronavirus Vaccines

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ABSTRACT

Background: The World Health Organization was declared COVID-19 a pandemic on March 11, 2020. As a result, to keep the coronavirus under control, protective technique like face covering is required. Vaccination, on the other hand, is regarded as a preventative and effective measure. As nursing students play an important role in the future of nursing, their perception regarding wearing mask and taking vaccine can be crucial in preventive measures regarding COVID-19.

Objective: The purpose of this study was to assess the perception of nursing students' regarding wearing mask and coronavirus vaccines.

Design: A descriptive correlational design was used to guide this study.

Settings and Participants: A total of 255 undergraduate nursing students in six colleges of nursing at six different universities in Iraq were selected by convenience sampling. All participants were invited to complete the questionnaire through Google Form from February 14, 2022 to February 24, 2022.

Methods: The sampling method was applied in this study using a non-probability purposive method. Data were collected using an online questionnaire consisted of demographic characteristics and 32 items about the Face Mask Perception Scale and 11 items about VAC-COVID-19 scale.

Results: The results indicated that the majority of students had a positive perception of wearing facial masks (n = 210; 82.4%). The study results also displayed that less than a half had an unsound perception of coronavirus vaccine (n = 123; 48.2%), followed by those who had somewhat sound perception (n = 120; 47.1%), and those who had sound perception (n = 12; 4.7%).

Conclusions: As future nurses, nursing students can play a critical role in educating patients about COVID-19 risks and benefits. Findings suggested that nursing students need to consider vaccine concerns and provide vaccine development education.

Keywords: Covid-19; Coronavirus Vaccines; Face Masks Wearing; Nursing Students.

INTRODUCTION

In March 2020, the World Health Organization (WHO) declared coronavirus disease as a pandemic [1] and a global health emergency on the 30th of January [2]. At the moment, it appears that the pandemic has no end in sight, which caused a considerable measure of challenge and socioeconomic suffering, and in order to combat the spread of COVID-19, broad public health measures have been implemented, for example, wearing a mask [3]. Therefore, the recommendation to prevent the spread of a life-threatening pathogen, COVID-19, was mentioned by WHO on March 19th, 2020 [4]. One of them included the use of face masks by healthcare personnel and suspected individuals with symptoms of the disease [4].

Following the outbreak of the Spanish flu in San Francisco in 1919, an Anti-Mask League was formed, which argued that masks were ineffective and inappropriate for public use [5,6]. It was a protest movement that did not last long, and most people followed advice to wear masks [5,6]. A similar incident occurred during the recent outbreak of the corona pandemic [6,7]. Furthermore, how closely people follow their local authorities' instructions may have a positive influence on their mask use and ability to suppress infection [8].

To keep the coronavirus under control, protective techniques like face covering and social distance are required [9]. Vaccination, on the other hand, is regarded as a preventative and effective approach to reducing infectious diseases [10, 11, 12, 13, and 14]; vaccines are less expensive [15, 16, 17]; and have significantly reduced morbidity and mortality rates over time.

According to Kreps et al., 2020[18] vaccination effectiveness and safety are essential considerations in the widespread acceptance of the COVID-19 vaccine. In fact, the WHO designated vaccine hesitancy as a global health threat in 2019. Vaccine hesitation refers to a person's unwillingness or rejection to be vaccinated despite the availability of a vaccine [19]. According to Cuello-Garcia [20] and González-Padilla & Tortolero-Blanco [21], the media has significantly contributed to information sharing because it is relatively easy and accessible to a large number of people. However, the media may contribute to unfavorable views against vaccinations by allowing false information to proliferate quickly [20, 21].

There are different factors that may contribute to the reluctance to vaccination, such as risk perception, trust, and the perceived importance of vaccination [22]. Gagneux-Brunon et al. [23] and Nzaji et al. [24] reported COVID-19 vaccination rejection among healthcare personnel, which is especially troubling since it may influence the general public's attitude. Sallam, [25] further mentioned that medical staff are not the only ones who are concerned about being vaccinated. A large percentage of medical students, especially nursing students, are also hesitant about getting the COVID-19 vaccine [26, 27]. Given the critical role that nursing college students will play as health care professionals in the future, achieving a high rate of COVID-19 vaccine acceptance is critical, and as a first step, identifying nursing students' concerns, barriers, and expectations around vaccination approval is critical [27].

Education has also been linked to increased participation in pro-health activities [28, 29], such as the usage of masks [30]. Ultimately, in order to improve vaccine readiness and mask use, perceptions of vaccine safety, and perceptions of face mask wearing, effective public health messaging to combat vaccine hesitancy and mask wearing resistance should focus on providing information about immediate and long-term vaccine side effects and face mask benefits [30, 31, 32].

Importance of the Study: Nursing students, as frontline healthcare providers, are necessary to assure a safe and ongoing COVID-19 vaccine response [26] and educate the public about safety measures such as mask use [30]. According to Manning et al., [26], it is vital that nurses understand the value of vaccination as well as the fact that their problems and concerns are addressed when nursing students join the health sector and care for patients after graduation. As a result, the current study is important in understanding how nursing students, as future professionals, perceive face masks and COVID vaccines, which could lead to the development of interventions to change face mask wearing and vaccination habits. Because they may not just have positive or

negative perceptions about face masks and vaccines, but instead a variety of perceptions that impact their behavior [30, 32].

Ultimately, by assessing face mask and COVID vaccine perceptions, this study aims to assess the perception of nursing students' regarding wearing mask and tacking COVID's vaccine. This highlights the importance of wearing a face mask and COVID-19 vaccination among students which can protect them and reduce the transmission of infection to their families and communities. The researchers hypothesized that nursing students have positive perception regarding wearing a face mask and COVID-19 vaccination.

MATERIAL AND METHODS

Design: A descriptive correlational design was used to accomplish this.

Population and Sampling: The study population included undergraduate nursing students in all colleges of nursing in Iraq. A sample of 255 nursing students via the convenience sampling method were selected.

Inclusion/Exclusion Criteria: The participants were nursing students who match the following inclusion: Undergraduate nursing students in the morning studies of all class levels and both male and female students of all ages. Nursing students in night shift were excluded.

Sample Size: The number of students enrolled in Iraqi nursing colleges is estimated to be between 8000 and 9000 students. Based on a confidence level of 90%, and a margin of error of 5%, the minimum sample size is 246 student nurses. In this study, the total of 255 participants were collected.

Setting: Six colleges of nursing at six different universities in Iraq (University of Baghdad, University of Karbala, University of Babylon, University of Al-Kufa, University of Al-Qadisiyah, and the University of Al-Muthanna) were the settings in this study.

Ethical Considerations: The IRB for the study was granted by University of Baghdad, College of Nursing on October 14, 2021. All participants were informed about the details of the study. The cover letter informed that the anonymity of participants was guaranteed. Students were permitted to refuse or withdraw from the research at any time because participation was optional. All responses were held in a closed, safe area, and all information was kept secret.

Instrumentation: A demographic survey and two instruments (the Face Mask Perception Scale [FMPS] and the VAC-COVID-19 scale) were used for data collection for this study. The demographic information included age and gender.

The FMPS, which was developed by Howard [30], measures justification for not wearing a face mask. For this study, the instrument was used to identify perceptions of undergraduate nursing students regarding wearing masks. The scale has eight dimensions, which consist of "comfort," "efficacy doubts," "access," "compensation," "inconvenience," "appearance," "attention," and "independence." Each dimension has four items. Participants were evaluated on a total of 32 items. Each item was rated on a seven-point Likert scale (1 = "strongly disagree," 7 = "strongly agree"). The higher the subscale values, the more negative the face mask perceptions. The cut-off point for the dimensions is calculated by subtracting the minimum score "4" from the maximum score "28". The range of "28" would be divided by "2" to get the interval of "12", so participants with scores ranging from "4" to "16" would be considered to have positive perception, while those with scores ranging from "17" to "28" would be considered to have negative perception. The FMPS is used after obtaining permission via email from the copyright owner.

The VAC-COVID-19 scale was developed by Mejia et al. [32] to measure the perception of COVID-19 vaccine acceptance. The VAC-COVID-19 scale is used to assess and evaluate positive and negative perceptions of COVID-19 vaccines. The scale was divided into two groups. The first group consisted of seven items, including reasons for not receiving a vaccination, and the second group consisted of four items, including reasons for receiving a vaccination. The study sample completed an 11-item scale. Each item had five possible Likert-type responses: "strongly disagree," "disagree," "neither disagree nor agree," "agree," and "strongly agree." The cut-off point of coronavirus vaccine perception is calculated by subtracting the minimum score of "11" from the maximum score of "55". The range would be "44", which is divided by three to get three tertiles. Participants whose score ranges between "11" and "25" would be classified in the first tertile (unsound perception), participants whose score ranges between "26" and "40" would be classified in the second tertile (somewhat sound perception), and participants whose score ranges between "41" and "55" would be classified in the third tertile (sound perception). According to Mejia et al. [32], Cronbach's coefficient was used to determine the scale's reliability, and it was found to be above 0.8, suggesting that the VAC-COVID-19 scale is reliable. The VAC-COVID-19 scale is used after obtaining permission via email from the copyright owner.

The study instrument was forward translated by two bilingual faculty members and backward translated by other two bilingual faculty members. This translation was accomplished blindly and separately.

Data Analysis: The data analysis was carried out using the statistical package SPSS version 26.0. The demographic data was analyzed including age and gender using descriptive statistics to describe the sample. The means and standard deviations of continuous variables were stated. The frequency and percentages were used to represent categorical variables. The structural equation modeling, correlation personal, and independent-sample t-test was used to determine which of the characteristics related with face masks and COVID-19 vaccines.

RESULTS OF THE STUDY

The descriptive analysis demonstrated that students were an average age of 20.95 ± 1.91 years old. Concerning the gender, most were females (n = 202; 79.2%) compared to males (n = 53; 20.8%).

The study results revealed that more than a half had a positive perception of comfort related to wearing face masks (n = 147; 57.6%) compared to those who had a negative perception (n = 108; 42.4%). Most had a positive perception of the efficacy doubts of wearing face masks (n = 197; 77.3%) compared to those who had a negative perception (n = 58; 22.7%). The clear majority had a positive perception of access to wearing face masks (n = 243; 95.3%) compared to those who had a negative perception (n = 12; 4.7%). More than a half had a positive perception of compensation related to wearing a face mask (n = 130; 51.0%) compared to those who had a negative perception (n = 125; 49.0%). Most had a positive perception of the inconvenience related to wearing a face mask (n = 191; 74.9%) compared to those who had a negative perception (n = 64; 25.1%). The majority had a positive perception of appearance related to wearing face masks (n = 226; 88.6%) compared to those who had a negative perception (n = 29; 11.44%). The majority had a positive perception of attention related to wearing a face mask (n = 205; 80.4%) compared to those who had a negative perception (n = 50; 19.6%). More than a half had a negative perception of independence related to wearing face masks (n = 141; 55.3%) compared to those who had a negative perception (n = 114; 44.7%). The majority had a positive perception of wearing facial masks (n = 210; 82.4%) compared to those who had a negative perception (see table 1).

The study results displayed that less than a half had an unsound perception of coronavirus vaccine (n = 123; 48.2%), followed by those who had somewhat sound perception, and those who had sound perception (see table 2).

There was a statistically significant positive correlation between students' age and their perception of wearing facial mask (r = .128 at p = 0.05), see table (3). However, there was a statistically significant inverse correlation between students' age and their perception of coronavirus vaccine (r = -.130; at p = 0.05),

also see table (3). On the other hand, there was no statistically significant difference between students' gender groups and their perception of wearing facial mask at (F= .055; P value = .830) and coronavirus vaccine at (F= .002; P value = .982), see table (4,5).

Table 1: Students' perception of wearing facial mask (N = 255)

Dimension	Negative		Positive	
	Frequency	Percent	Frequency	Percent
Comfort	108	42.4	147	57.6
Efficacy Doubts	58	22.7	197	77.3
Access	12	4.7	243	95.3
Compensation	125	49.0	130	51.0
Inconvenience	64	25.1	191	74.9
Appearance	29	11.4	226	88.6
Attention	50	19.6	205	80.4
Independence	141	55.3	114	44.7
Overall	45	17.6	210	82.4

Cut-off-point for dimensions: Positive = 4-16; Negative = 17-28 Overall cut-off-pint: Positive = 32-128; Negative = 129-224

Table 2: Students' perception of coronavirus vaccine (N = 255)

	Perception of coronavirus vaccine					
	Unsound (11-25)		Somewhat sound (26-40)		Sound (41-55)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Overall perception	123	48.2	120	47.1	12	4.7

Table 3: Correlation between students' age and perception of wearing facial mask and coronavirus vaccine

Variables	Students' Age	Students' perception of wearing facial mask	Students' perception of coronavirus vaccine
Students' Age	-	128*	115
Students' perception of wearing facial mask	128*	-	
Students' perception of coronavirus vaccine	-130		

* Correlation is significant at the 0.05 level (2-tailed).

Table 4: Difference in students' perception of wearing facial mask between gender groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Students' perception of wearing mask	Equal variances assumed	.055	.814	.214	253	.830	.99057	4.62247	-8.11286	10.09400
	Equal variances not assumed			.224	86.389	.823	.99057	4.42619	-7.80784	9.78897

df: Degree of freedom; F: F-Statistics; Sig.: Significance; Std. Error: Standard Error; t: T-Test

Table 5: Difference in students' perception of coronavirus vaccine between gender groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Students' perception of coronavirus vaccine	Equal variances assumed	.002	.962	.023	253	.982	.02307	1.02335	-1.99230	2.03845
	Equal variances not assumed			.023	81.577	.982	.02307	1.02181	-2.00979	2.05594

df: Degree of freedom; F: F-Statistics; Sig.: Significance; Std. Error: Standard Error; t: T-Test

DISCUSSION

According to the descriptive analysis, the average age of the students was 20.95 ± 1.91 years. The recent results may provide light on the natural numbers and proportions of the students, as it is normal for students to be accepted into Iraqi universities between the ages of 18 and 22 or 23 [33]. The current study reveals that there was a statistically significant positive correlation between students' age and their perception of wearing facial masks, and this is due to the close ages of the students. A cross-sectional study conducted by Duong et al. [34] to measure knowledge, attitude, and practice towards face mask use amid the COVID‑19 pandemic amongst university students in Vietnam, and the main age group of the study sample was (20.8 ± 1.4) years. They found that the mean face mask use attitude score was 4.8 ± 0.8 and 72.8% of participants have positive attitudes towards face mask use [34]. Research by Howard [35] explained the association between age, face mask perceptions, and face mask wearing and they found that age did not have a statistically significant relationship with any face mask perception.

Current study also reveals that there was a statistically significant inverse correlation between students' age and their perception of the coronavirus vaccine. A cross-sectional study was conducted of Italian university students with a mean age of 23.6 years and found that 86.1% were willing to get vaccinated for COVID-19 [36].

Concerning gender, the study results indicated that most of participants was females (n = 202; 79.2%) compared to males (n = 53; 20.8%). This ratio is attributable to the central acceptance plan of the Iraqi Ministry of Higher Education and Scientific Research, which sets female at 75% acceptance and male at 25%, suggesting a notable increase in the number of female students [37]. The current study reveals that there is no statistically significant difference in students' perception of wearing facial

masks between gender groups. According to meta-analytic correlation by Howard [38], gender was not statistically differ regarding face mask wearing, and there was no consistent mediator of this impact in terms of face mask perception. However, Howard, discovered that there was a significant difference between gender and face mask perception [38]. Men were more likely than women to regard face masks as infringing on their independence, while women were more likely to perceive face masks as uncomfortable. As a result, while gender has no effect on whether or not a person wears a face mask, it does have an impact on how people perceive face masks. In addition, an internet survey carried out by Taylor and Asmundson found that negative attitudes regarding masks were mostly unrelated to demographic variables. That is, mask use has no correlation to age, gender, education level, or employment status [7].

We also found that there is no statistically significant difference in students' perception of the coronavirus vaccine between gender groups. In contrast, a cross-sectional study in seven European countries (Greece, Albania, Cyprus, Spain, Italy, Czech Republic, and Kosovo) that was conducted on nursing students with a mean age of 21.6 years and in which the majority of the students were females, found that men are more likely than women to intend to get vaccinated [27]. A study by Karlsson et al. [39] also found that men were significantly more likely to intend to vaccinate against COVID-19 than women.

The 32 items of eight dimensions were used to assess students' perception of wearing facial masks, as the finding from the current study shows that there is a positive perception of wearing facial masks (n = 210; 82.4%) compared to those who have a negative perception (n = 45; 17.6%). A cross-sectional study carried out in Egypt examining the knowledge, perceptions, and attitude of the Egyptian public towards the COVID-19 disease found that about three-quarters of participants believed that wearing a face mask could protect them from infection; only about 35% were willing to do this; and there was a positive attitude towards using protective measures [40]. An internet survey carried out by Taylor and Asmundson found that the majority of participants (84%) wore masks because of COVID-19. The remaining 16% who did not wear masks scored negative attitudes towards masks on most measures to a higher degree. They found that mask rejection is based on the opinion that masks are ugly or make people look silly [7].

Study findings show that less than half of the students (n = 123; 48.2%) have an unsound perception of the tacking coronavirus vaccine, followed by those with somewhat sound perception (n = 120; 47.1%), and only (n = 12; 4.7%) of those with sound perception. We expected that the perception of the vaccine could be higher among nursing students. Because of their future profession as healthcare providers, they could have a better understanding of the advantages of vaccinations and are more conscious of the need for them. These findings aware health authorities to take more specific and successful steps to increase vaccination perception among this population. This finding is consistent with a previous cross-sectional study that analysed Korean citizens' perceptions of COVID-19 vaccines and found that most Koreans have a negative perception of COVID-19 vaccines [41].

Limitations: There are some limitations in this study. Only six colleges from six universities were selected in the current study, which may not represent all nursing colleges all over the country. More representative findings could have been obtained with a bigger sample size. Additionally, only nursing students were involved in this study, making the results to not be generalized to other students of other professions.

CONCLUSIONS

The present study revealed that less than half of the students have an unsound perception of the coronavirus vaccine, followed by those who have a somewhat sound perception. That means most nursing students have a negative perception regarding coronavirus vaccines but they have a more positive perception toward wearing facial masks, which is important to limit the spread of the disease. According to the findings, respective health authorities should distribute and advertise health education programs as well as more accurate information. Targeted health education programs are required to increase positive perceptions of the COVID-19 vaccinations. Understanding the students' perceptions of the COVID-19 vaccines, as well as promoting their health participation and awareness, may be important in developing appropriate responses and interdisciplinary educational programs in the post-pandemic period.

REFERENCES

1. World Health Organization. (2020a). Director-General's opening remarks at the media briefing on COVID-19. https://www.who.int/dg/speeches/detail/who-director general-s-opening-remarks-at-the-media-briefing-on-covid-19-11-march -2020
2. World Health Organization. (2020b). Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). https://www.who.int/news/item/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)
3. O'Dowd, K., Nair, K., Forouzandeh, P., Mathew, S., Grant, J., Moran, R., Bartlett, J., Bird, J., & Pillai, S. (2020). Face masks and respirators in the fight against the COVID-19 pandemic: A review of current materials, advances and future perspectives. Materials, 13(15), 3363. https://doi.org/10.3390/ma13153363
4. World Health Organization. (2020c). Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. https://www.who.int/publications/i/item/10665-331495
5. Cohn, S. K. (2018). Epidemics: Hate and compassion from the plague of Athens to AIDS. Oxford University Press. https://doi.org/10.1093/oso/9780198819660.001.0001
6. Franchini, A., Auxilia, F., Galimberti, P., Piga, M., Castaldi, S., & Porro, A. (2020). COVID 19 and Spanish flu pandemics: All it changes, nothing changes. Acta Bio Medica: Atenei Parmensis, 91(2), 245-250. https://dx.doi.org/10.23750%2Fabm.v91i2.9625
7. Taylor, S., & Asmundson, G. (2021). Negative attitudes about facemasks during the COVID-19 pandemic: The dual importance of perceived ineffectiveness and psychological reactance. Plos One, 16(2), e0246317. https://doi.org/10.1371/journal.pone.0246317
8. Zhao, X., & Knobel, P. (2021). Face mask wearing during the COVID-19 pandemic: Comparing perceptions in China and three European countries. Translational Behavioral Medicine, 11(6), 1199-1204. https://doi.org/10.1093/tbm/ibab043
9. Romer, D., & Jamieson, K. (2020). Conspiracy theories as barriers to controlling the spread of COVID-19 in the US. Social Science and Medicine, 263, 113356. https://doi.org/10.1016/j.socscimed.2020.113356
10. Centers for Disease Control and Prevention. (2021). Covid-19 vaccine effectiveness research. https://www.cdc.gov/vaccines/covid-19/effectiveness research/protocols.html
11. Duc Ha, H., Minh Duc, N., & Minh Thong, P. (2020). The current update of vaccines for sars-cov-2. Electron J Gen Med, 17(5), 248. https://doi.org/10.29333/ejgm/8233
12. Monto, A. S. (2006). Vaccines and antiviral drugs in pandemic preparedness. Emerging Infectious Diseases, 12(1), 55-60. https://dx.doi.org/10.3201%2Feid1201.051068
13. Nichol, K. L. (2008). Efficacy and effectiveness of influenza vaccination. Vaccine, 26(4), 17-22. https://doi.org/10.1016/j.vaccine.2008.07.048
14. World Health Organization. (2021). Vaccine efficacy, effectiveness and protection. https://www.who.int/news-room/feature-stories/detail/vaccine-efficacy-effectiveness-and-protection

15. Kim, S., & Goldie, S. (2008). Cost-effectiveness analyses of vaccination programmes. Pharmacoeconomics, 26, 191-215. https://doi.org/10.2165/00019053-200826030-00004
16. Kohli, M., Maschio, M., Becker, D., & Weinstein, M. (2021). The potential public health and economic value of a hypothetical COVID-19 vaccine in the United States: Use of cost-effectiveness modeling to inform vaccination prioritization. Vaccine, 39(7), 1157-1164. https://doi.org/10.1016/j.vaccine.2020.12.078
17. Zeng, W., Halasa-Rappel, Y., Baurin, N., Coudeville, L., & Shepard, D. (2018). Cost effectiveness of dengue vaccination in ten endemic countries. Vaccine, 36(3), 413-420. https://doi.org/10.1016/j.vaccine.2017.11.064
18. Kreps, S., Prasad, S., Brownstein, J., Hswen, Y., Garibaldi, B., Zhang, B., & Kriner, D. (2020). Factors associated with US adults' likelihood of accepting COVID-19 vaccination. JAMA network open, 3(10), 2025594. https://doi.org/10.1001/jamanetworkopen.2020.25594
19. World Health Organization. (2019). Ten threats to global health in 2019. https://www.who.int/vietnam/news/feature-stories/detail/ten-threats-to-global-health-in-2019
20. Cuello-Garcia, C., Pérez-Gaxiola, G., & van Amelsvoort, L. (2020). Social media can have an impact on how we manage and investigate the COVID-19 pandemic. Journal of Clinical Epidemiology, 127, 198-201. https://dx.doi.org/10.1016%2Fj.jclinepi.2020.06.028
21. González-Padilla, D., & Tortolero-Blanco, L. (2020). Social media influence in the COVID-19 pandemic. International Braz J Urol, 46, 120-124. https://doi.org/10.1590/S1677-5538.IBJU.2020.S121
22. Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. (2013). Vaccine hesitancy: An overview. Human Vaccines & Immunotherapeutics, 9(8), 1763–1773. https://doi.org/10.4161/hv.24657
23. Gagneux-Brunon, A., Detoc, M., Bruel, S., Tardy, B., Rozaire, O., Frappe, P., & Botelho-Nevers, E. (2021). Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: A cross-sectional survey. Journal of Hospital Infection, 108, 168-173. https://doi.org/10.1016/j.jhin.2020.11.020
24. Nzaji, M., Ngombe, L., Mwamba, G., Ndala, D., Miema, J., Lungoyo, C., Mwimba, B., Bene, A., & Musenga, E. (2020). Acceptability of vaccination against COVID-19 among healthcare workers in the Democratic Republic of the Congo. Pragmatic and Observational Research, 11, 103-109. https://dx.doi.org/10.2147%2FPOR.S271096
25. Sallam, M. (2021). COVID-19 vaccine hesitancy worldwide: A concise systematic review of vaccine acceptance rates. Vaccines, 9 (2), 160. https://doi.org/10.3390/vaccines9020160
26. Manning, M., Gerolamo, A., Marino, M., Hanson-Zalot, M., & Pogorzelska-Maziarz, M. (2021). COVID-19 vaccination readiness among nurse faculty and student nurses. Nursing Outlook, 69(4), 565-573. https://doi.org/10.1016/j.outlook.2021.01.019
27. Patelarou, E., Galanis, P., Mechili, E., Argyriadi, A., Argyriadis, A., Asimakopoulou, E., Brokaj, S., Bucaj, J., Carmona-Torres, J., Cobo-Cuenca, A., Doležel, J., Finotto, S., Jarošová, D., Kalokairinou. A., Mecugni, D., Pulomenaj, V., Saliaj, A., Sopjani, I., Zahaj, M., & Patelarou, A. (2021). Factors influencing nursing students' intention to accept COVID-19 vaccination: A pooled analysis of seven European countries. Nurse Education Today, 104, 105010. https://doi.org/10.1016/j.nedt.2021.105010
28. Park, C., Cho, D., & Moore, P. (2018). How does education lead to healthier behaviours? Testing the mediational roles of perceived control, health literacy and social support. Psychology & Health, 33(11), 1416-1429. https://doi.org/10.1080/08870446.2018.1510932
29. Zajacova, A., & Lawrence, E. (2018). The relationship between education and health: reducing disparities through a contextual approach. Annual Review of Public Health, 39, 273-289. https://doi.org/10.1146/annurev-publhealth-031816-044628
30. Howard, M. C. (2020). Understanding face mask use to prevent coronavirus and other illnesses: Development of a multidimensional face mask perceptions scale. British Journal of Health Psychology, 25(4), 912-924. https://doi.org/10.1111/bjhp.12453
31. Hudson, A., & Montelpare, W. (2021). Predictors of vaccine hesitancy: Implications for COVID-19 public health messaging. International Journal of Environmental Research and Public Health, 18(15), 8054. https://doi.org/10.3390/ijerph18158054
32. Mejia, C., Rodriguez-Alarcon, J., Ticona, D., Flores-Lovon, K., Paredes-Obando, M., Avalos-Reyes, M., Ccasa-Valero, L., Carbajal, M., Esteban, R., Benito, O., Rivera-Lozada, O., & Tovani-Palone, M. (2021). Validation of a scale to measure the perception of SARS-CoV-2 vaccines acceptance: The VAC-COVID-19 scale. Electronic Journal of General Medicine, 18(5), 303. https://doi.org/10.29333/ejgm/11012
33. Aljuboori, A. F., Fashakh, A. M., & Bayat, O. (2020). The impacts of social media on university students in Iraq. Egyptian Informatics Journal, 21(3), 139–144. https://doi.org/10.1016/j.eij.2019.12.003
34. Duong, M. C., Nguyen, H. T., & Duong, B. T. (2021). A cross-sectional study of knowledge, attitude, and practice towards face mask use amid the COVID-19 pandemic amongst university students in Vietnam. Journal of Community Health, 46(5), 975-981. https://doi.org/10.1007/s10900-021-00981-6
35. Howard, M. C. (2021a). The relations between age, face mask perceptions and face mask wearing. Journal of public health. https://doi.org/10.1093/pubmed/fdab018
36. Barello, S., Nania, T., Dellafiore, F., Graffigna, G., & Caruso, R. (2020). Vaccine hesitancy among university students in Italy during the COVID-19 pandemic. European Journal of Epidemiology, 35(8), 781-783. https://doi.org/10.1007/s10654-020-00670-z
37. Al-Zeyadi, S., & Mohammed, S. H. (2019). Measures academic stress among undergraduate nursing students. Indian Journal of Forensic Medicine & Toxicology, 13(4), 979-983.
38. Howard, M. C. (2021b). Gender, face mask perceptions, and face mask wearing: Are men being dangerous during the COVID-19 pandemic? Personality and Individual Differences, 170, 110417. https://doi.org/10.1016/j.paid.2020.110417
39. Karlsson, L. C., Soveri, A., Lewandowsky, S., Karlsson, L., Karlsson, H., Nolvi, S., Karukivi, M., Lindfelt, M., & Antfolk, J. (2021). Fearing the disease or the vaccine: The case of COVID-19. Personality and Individual Differences, 172, 110590. https://doi.org/10.1016/j.paid.2020.110590
40. Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., Ziady, H. H., Alorabi, M., Ayyad, M., & Sultan, E. A. (2020). Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (COVID-19). Journal of Community Health, 45(5), 881-890. https://doi.org/10.1007/s10900-020-00827-7
41. Lee, H., Noh, E. B., Park, S. J., Nam, H. K., Lee, T. H., Lee, G. R., & Nam, E. W. (2021). COVID-19 vaccine perception in south Korea: Web crawling approach. JMIR Public Health and Surveillance, 7(9), 31409. https://preprints.jmir.org/preprint/31409