

Views and Beliefs Regarding COVID-19 Vaccines Among the IDF Dental Staff

ABSTRACT

The outbreak of the COVID-19 pandemic caused changes in all aspects of daily life, including adjustments in dental work. The COVID-19 vaccine was rapidly approved, provoking hesitations among the general public as well as dental staff. The aim of this study is to assess the views and beliefs of IDF dental staff regarding COVID-19 and its vaccine

Methods: A questionnaire was sent to all IDF dental staff during the first week of January 2021. 219 participants replied. The questionnaire consisted of both demographic data and Likert scale phrases.

Results: General dental practitioners, dental specialists, dental hygienists, and dental assistants responded. Men were vaccinated at a higher rate than women, this is possibly explained by the finding that women were more concerned about the vaccine's safety in terms of future fertility. The younger population was more apprehensive about short and long-term effects of the vaccine. Dental assistants and hygienists showed greater concerns regarding the safety of the vaccine and felt that dental activity should be limited to emergency treatment.

Discussion: The main difference in vaccination rates observed between groups can be attributed to concerns about future fertility and age differences. In addition, it may be associated with the responders' education and exposure to media publications.

Limitations: Responders from the younger age groups, as well as women, consisted mostly of dental assistants and hygienists, which may be a confounding factor.

Conclusions: This study shows a difference in attitudes towards the COVID-19 vaccine and its safety, as well as compliance with vaccination among IDF dental staff. In addition, the study emphasizes the importance of addressing younger crowds in the proper manner in order to improve vaccination compliance.

Introduction:

In late 2019, a new pathogen that causes acute respiratory syndrome emerged, and was classified as "2019 Novel Coronavirus" [1]. First discovered in China, it soon caused a worldwide pandemic with confirmed cases in over 200 countries across the globe [2]. The first cases in Israel were identified in February 2020 with the return of civilians from a Japanese cruise ship [1]. The virus is mainly, though not solely, a respiratory virus and new disease effects are constantly being reported, both in the short and the long term [2-4].

The detection of Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) in the saliva of patients led to the realization that dental staff is at high risk due to the possibility of infection within dental clinics. This is owing both to the

Authors:

Shlomi Ritz, DMD [1],
**Galit Almozino, DMD
MSc MHA, MPH** [2],
Lee Slutzky Ritz, MD [1],
Noam Protter, DMD [1].

Affiliations:

- [1] Medical Corps, IDF.
- [2] Faculty of Dental Medicine, Hebrew University of Jerusalem, Israel; Hadassah Medical Center, Jerusalem, Israel.

Corresponding Author:

Dr. Shlomi Ritz
Shlomiritz2006@gmail.com

To cite this article:

Ritz S, Almozino G, Slutzky-Ritz L, Protter N. Views and Beliefs Regarding COVID-19 Vaccines Among the IDF Dental Staff. J Isr Mil Med, June 2021, 18 (50): 53-47.

Keywords: COVID-19, COVID-19 Vaccine, Dental Staff, Epidemiology, Education, Perceptions, Likert Scale.

creation of aerosols during dental treatments and the inevitable proximity of dental staff and patients [5,6]. Considering this hazard, and with constantly evolving research, dental staff had to make major changes in treatment protocols to reduce the risk of infection [6,7]. First, the American Dental Association, followed by the Israeli Ministry of Health, recommended to postpone dental procedures except for urgent care [8]. New safety guidelines were embraced, including fewer patients being admitted to every clinic and in a greater time interval per treatment, using more adequate protective gear, and carrying out a triage questionnaire for each patient [7]. The pandemic, in addition to causing a significant change in dental practices, also caused emotional distress among the dental staff [2,9].

Owing to a global research effort, several vaccines were developed and approved rapidly, which led to a great deal of apprehension and vaccine hesitancy among the public due to safety concerns [10]. In comparison to the general public, medical staff was more willing to get vaccinated when the vaccine became available [11]. It is possible that medical staff's greater willingness to get vaccinated was due to their high-risk exposure and medical knowledge [9]. With the increasing availability of vaccines to medical personnel, it was our aim in the present study to evaluate the Israel Defense Forces (IDF) dental medical staff's – dentists, dental assistants, and dental hygienists – thoughts and beliefs concerning the COVID-19 pandemic, and their conceptions regarding the current rapidly progressing vaccination operation in Israel.

Methods:

Study design and setting

This is a cross-sectional web-based survey, and a convenience sampling method was adopted. A request to take part in this study was sent to the entire dental medical staff population in the IDF. Data were collected using a self-administered questionnaire. Data collection was continued until the goal of 50% of the potential participants was met.

Study participants

The survey link was sent to all IDF dental health personnel, including dental assistants, hygienists, general practitioner dentists, and specialists. Two hundred and nineteen participants responded to the survey.

Data collection procedure

We used a web-based survey. Potential participants were approached via telephone calls and a designated accounts group (WhatsApp). A Google Form questionnaire was sent to each of the participants via their social media accounts with a request to fill it out and submit it. The first page of the Google Form included the consent form that explained the research project overview and the participant's confidentiality, assuring them that their personal information would remain confidential and they retain the right to withdraw the questionnaire whenever they so wish. This survey got an exemption from the IDF Medical Corps Helsinki Committee (num 2095).

Outcome measures

A self-administered questionnaire was developed after a thorough interview was conducted with staff members representing each of the different dental occupations included in the study. Additionally, literature published about dental medical personnel's thoughts and beliefs regarding COVID-19, vaccines, and specifically COVID-19 vaccines, was reviewed [12]. The questionnaire consisted of both multiple-choice questions and Likert scale items.

The questionnaire was divided into 2 parts consisting of 26 items: demographic characteristics (8 items), knowledge and attitude (18 items). Demographic characteristics consisted of 8 items, including age, sex, level of education, profession, work experience, and COVID-19 positivity. Attitude consisted of a 5-points Likert scale, including the options strongly agree, agree, neutral, disagree, and strongly disagree.

Data management and analyses

We used Microsoft Excel 2016 and statistical analyses were performed using the Statistical Product and Service Solutions (SPSS®) version 25.0 (IBM, Chicago, IL, USA). Categorical variables are presented as frequencies and percentages. Pearson's Chi Square test and the likelihood-ratio test were used to analyze the potential association between a participant's demographics and their vaccination status and attitudes according to their Likert scale responses. A P-value of ≤ 0.05 was considered statistically significant.

Results:

Table 1 presents the demographic characteristics of the study population. The study included a total of

219 participants, all of whom had primarily been confirmed as IDF dental personnel. The participants responded to our survey during the first week of January 2021, after granting consent. When analyzing our study population, we learned that it consisted predominantly of responders who were women (74.9%), young adults (52.5% aged 18-24), dental assistants (48.4%) and with up to 3 years of experience (66.2%). Among all participants, 8.2% had been diagnosed with COVID-19 in the past with about an even distribution among dentists [either General Practitioners (GPs)

or dental specialists].

Table 2 presents the different perceptions by sex. A higher percentage of men chose to get vaccinated (94.5% vs. 74.4%, $p=0.001$). Women showed greater concerns about vaccine safety (disagree or largely disagree by Likert scale: 3.6% for men vs 17% for women, $p<0.001$) and future fertility (agree or largely agree by Likert scale: 20% for men vs 54.3%

Table 1: Demographic characteristics of the study population

Variables	Values	Number (n=219)	Percent (%)
Age (years)	18-24	115	52.5
	25-51	104	47.5
Sex	Men	55	25.1
	Women	164	74.9
Occupation	Dental assistant	106	48.4
	Dental hygienist	9	4.1
	General dentist	85	38.8
	Specialist in dentistry	19	8.7
Years of experience	0-3	145	66.2
	4-6	35	16.0
	7-10	20	9.1
	More than 10	19	8.7
Tested positive for SARS -COV2	Yes	18	8.2
	No	201	91.8

Table 2: Different perceptions by sex

* Pearson's Chi Square test and the likelihood-ratio test

	Men	Women	P- value
	N(%)	N(%)	
Got vaccinated	52(94.5)	122(74.4)	<0.001*
The vaccine given to me is safe and has gone through proper regulatory medical assessments			
Total	55(100)	164(100)	<0.001^
Do not agree at all	1(1.8)	5(3)	
Do not agree	1(1.8)	23(14)	
Neutral	10(18.2)	48(28)	
Agree	20(36.4)	65(39.6)	
Largely agree	23(41.8)	25(15.2)	
Concerned regarding negative impacts of COVID-19 vaccinations on fertility			
Total	55(100)	164(100)	<0.001^
Do not agree at all	13(23.6)	16(9.8)	
Do not agree	21(38.2)	24(14.6)	
Neutral	10(18.2)	35(21.3)	
Agree	5(9.1)	28(17.1)	
Largely agree	6(10.9)	61(37.2)	

for women, $p < 0.001$).

Table 3 presents the different perceptions of dental professionals by age. A larger percentage of the mature age group (aged 25–51) chose to receive the vaccine compared to the younger age group of responders (aged 18–24) (89.4% vs. 70.4%; $p = 0.001$). Moreover, a higher proportion of those who had not yet been vaccinated were willing to be vaccinated in the future (84.6% vs. 41.2%; $p = 0.01$). The younger population also showed greater reservations about both short and long-term adverse effects of the vaccine, with agree or largely agree by the Likert scale regarding short (66.1% vs. 46.2%; $p < 0.001$) and long-term (74.0% vs. 43.3%; $p < 0.001$) adverse effects significantly higher in the younger age group compared to the older age group. Additionally, a higher proportion of the younger age group agreed with the notion that dental clinics should have been kept closed for routine dental care, with 56.5% of the younger population either agreeing or largely agreeing in their Likert scale response vs. 28.8% in the

Table 3: Perceptions of dental professionals by age

*Pearson's Chi Square test and the likelihood-ratio test

	Younger population: ages 18–24 years	Older population: ages 25–51 years	P- value
	N(%)	N(%)	
Vaccinated	81(70.4)	93(89.4)	<0.001*
Willing to receive a COVID-19 vaccine	14(41.2)	11(84.6)	0.01*
Concerned regarding the short-term adverse effects of the vaccine			
Total	115(100)	104(100)	<0.001^
Do not agree at all	3(2.6)	11(10.6)	
Do not agree	11(9.6)	23(22.1)	
Neutral	25(21.7)	22(21.2)	
Agree	23(20)	37(35.6)	
Largely agree	53(46.1)	11(10.6)	
Concerned regarding the long-term adverse effects of the vaccine			
Total	115(100)	104(100)	<0.001^
Do not agree at all	1(0.9)	9(8.7)	
Do not agree	10(8.7)	25(24)	
Neutral	19(16.5)	25(24)	
Agree	31(27)	29(27.9)	
Largely agree	54(47)	16(15.4)	
Believe that dental clinics should have been kept closed			
Total	115(100)	104(100)	<0.001^
Do not agree at all	5(4.3)	15(14.4)	
Do not agree	16(13.9)	32(30.8)	
Neutral	29(25.2)	27(26)	
Agree	23(20)	20(19.2)	
Largely agree	42(36.5)	10(9.6)	

older age group ($p < 0.001$).

Table 4 presents the different perceptions by occupation (dentists vs. non-dentist personnel). Compared to dentists and dental specialists, the proportion of dental assistants and hygienists who had been vaccinated (94.0% vs. 80.0%; $p < 0.001$) or were willing to be in the future (90.4% vs. 69.6%; $p < 0.001$) was significantly lower. Compared to dentists, the dental assistants and hygienists showed greater hesitation when questioned about their perception regarding the safety of the vaccine, with 19.1% disagree or largely disagree by the Likert scale compared to 7.7% for dentists ($p < 0.001$). Table 4. Moreover, compared to dentists, the dental assistants and hygienists showed greater concerns, with higher proportions agreeing or largely agreeing, according to their Likert scale response, with the statement that they are concerned regarding the short (48.1% vs. 64.4%; $p < 0.001$) and long-term (43.3% vs. 73.9%; $p < 0.001$) adverse effects of the vaccine. The non-dentist personnel were also in greater agreement with the statement regarding the closure of all dental clinics except for urgent care, with 59.1% of non-dental personnel agreeing or largely agreeing with this phrase vs. 26% in the dentists' group ($p < 0.001$).

Table 4: Different perceptions by occupation (dentists vs. non-dentist personnel)

* Pearson's Chi Square test and the likelihood-ratio test

	Younger population: ages 18-24 years	Older population: ages 25-51 years	P- value
	N(%)	N(%)	
Vaccinated	80(69.6)	94(90.4)	<0.001*
The vaccine given to me is safe and has gone through proper regulatory medical assessments			
Total	115(100)	104(100)	<0.001^
Do not agree at all	5(4.3)	1(1)	
Do not agree	17(14.8)	7(6.7)	
Neutral	38(33)	18(17.3)	
Agree	41(35.7)	44(42.3)	
Largely agree	14(12.2)	34(32.7)	
Concerned regarding the short term adverse effects of the vaccine			
Total	115(100)	104(100)	<0.001^
Do not agree at all	3(2.6)	11(10.6)	
Do not agree	12(10.4)	22(21.2)	
Neutral	26(22.6)	21(20.2)	
Agree	21(18.3)	39(37.5)	
Largely agree	53(46.1)	11(10.6)	
Concerned regarding the long term adverse effects of the vaccine			
Total	115(100)	104(100)	<0.001^
Do not agree at all	1(0.9)	23(22.1)	
Do not agree	10(8.7)	36(34.6)	
Neutral	19(16.5)	23(22.1)	
Agree	29(25.2)	12(11.5)	
Largely agree	56(48.7)	10(9.6)	
Believe that dental clinics should have been kept closed			
Total	115(100)	104(100)	<0.001^
Do not agree at all	5(4.3)	15(14.4)	
Do not agree	16(13.9)	32(30.8)	
Neutral	26(22.6)	30(28.8)	
Agree	25(21.7)	18(17.3)	
Largely agree	43(37.4)	9(8.7)	

Discussion:

As the COVID-19 pandemic continues to challenge our personal and professional lives, the race for an effective vaccine has become pressing [10]. With dental healthcare personnel within the IDF being a susceptible group for COVID-19 infection [13], there is an urge to vaccinate this entire population in order to protect both dental health workers' health and military competence.

In the present study, we aimed to investigate current views and perceptions of the IDF dental personnel and analyze the different approaches regarding the pandemic, as well as obstacles and hesitations in vaccination of these populations. Our questionnaire, sent to all categories of dental staff, included both responders' demographic data and various phrases concerning their views on the pandemic, the IDF response to the pandemic, the vaccine, and its safety, a topic of much public debate.

The first notable difference was that men stated they were getting vaccinated at higher rates than women. The theoretical impact of vaccination on fertility may contribute to vaccination hesitancy in women [14]. This theory is supported by the fact that more women than men expressed their concern about future fertility, as rumors spread regarding the similarity between the vaccine and placental proteins [15]. We might presume that this difference can be attributed to the fact that most female responders to our survey were either dental hygienists or dental assistants, a younger population, but this tendency was also seen in other medical professions [16].

Another parameter predicting vaccination likelihood is age, as a significantly lower percentage of the young-age group responded that they had been vaccinated or would like to be vaccinated in the future, and this group also expressed much less confidence in the vaccine's safety and more concerns about side effects both short-term and long-term. This correlates with similar data in other population-based research [16], raising the question of the influence of medical education and one's susceptibility to false mass media publications, especially in the younger population, which grew up with social media advancements [17].

This theory is further reinforced by the fact that a significantly higher percentage of dentists (both GPs and specialists) perceived vaccination as safe as opposed to the non-dentist responders (dental assistants and hygienists), as a larger percent of the

non-dentists expressed worries about the vaccine's safety, in both the short and long term. Again, these concerns could be attributed to rumors of the vaccine compromising future fertility which seemed to affect the non-dentist group's views significantly more. A significantly higher percentage of dentists chose to be vaccinated when compared to non-dentists, again, in our opinion, demonstrating the non-dentists' doubts regarding conventional and formal medical information.

The different perceptions of dentists versus all other dental professions were also demonstrated by their opinions about the IDF's function. Previously, all dental clinics had been closed except for urgent care. With greater knowledge about the virus's transmission routes and the possibility of infection, all dental clinics gradually returned to normal function under the new safety conditions [7]. Most of the young-age-group participants believed dental clinics should have been kept closed, as opposed to the older group. Furthermore, most of the non-dental personnel believed that the dental clinics should have been kept closed, while only a minority of the dentists believed so. This, in our opinion, greatly stresses the point of perceptions being based on fear rather than knowledge in less educated populations, a difference also seen in other studies [16].

There were several limitations to our study, primarily the fact that female and young age groups consisted of mostly dental assistants and hygienists, which may be a confounder when comparing said populations. To further emphasize this assumption, similar differences are seen when comparing dentists and non-dentists. Furthermore, as dental assistants, who represent the vast majority of these age groups, are chosen to serve their obligatory military service according to largely similar demographic data and personality and intellect quires, they may not be representative of the knowledge and attitudes of the general age group. As such, data should be compared with various young aged populations.

Conclusions:

This is a primary study, showing the difference in attitudes towards the COVID-19 vaccine safety and the resultant compliance with vaccination. In our belief, it emphasizes the difference in vaccine confidence between different ages and professions and sheds a light on the importance of advertising and the ease and accessibility of information, particularly in this day and age, with misleading

media easily accessible on our smartphones. As the Israeli vaccination operation continues to progress with pandemic eradication in mind, more energy should be invested in providing the public with proper medical information.

Further research should be done in varied professions and in all age groups.

REFERENCES

- [1]. Itelman E, Wasserstrum Y, Segev A, et al. Clinical Characterization of 162 COVID-19 Patients in Israel: Preliminary Report from a Large Tertiary Center. *Israel Medical Association Journal*. 2020;22(5):271-274. Accessed February 3, 2021. <https://pubmed.ncbi.nlm.nih.gov/32378815/>
- [2]. Barabari P, Moharamzadeh K. Novel Coronavirus (COVID-19) and Dentistry—a Comprehensive Review of Literature. *Dentistry Journal*. 2020;8(2). doi:10.3390/dj8020053
- [3]. Bansal M. Cardiovascular Disease and COVID-19. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*. 2020;14(3):247-250. doi:10.1016/j.dsx.2020.03.013
- [4]. del Rio C, Collins LF, Malani P. Long-Term Health Consequences of COVID-19. *JAMA – Journal of the American Medical Association*. 2020;324(17):1723-1724. doi:10.1001/jama.2020.19719
- [5]. Baghizadeh Fini M. What Dentists Need to Know About COVID-19. *Oral Oncology*. 2020;105. doi:10.1016/j.oraloncology.2020.104741
- [6]. Jamal M, Shah M, Almarzooqi SH, et al. Overview of Transnational Recommendations for COVID-19 Transmission Control in Dental Care Settings. *Oral Diseases*. Published online June 3, 2020. doi:10.1111/odi.13431
- [7]. Passarelli PC, Rella E, Manicone PF, Garcia-Godoy F, D'Addona A. The Impact of the COVID-19 Infection in Dentistry. *Experimental Biology and Medicine*. 2020;245(11):940-944. doi:10.1177/1535370220928905
- [8]. Carter E, Currie CC, Asuni A, et al. The First Six Weeks – Setting up a UK Urgent Dental Care Centre During the COVID-19 Pandemic. *British Dental Journal*. 2020;228(11):842-848. doi:10.1038/s41415-020-1708-2
- [9]. de Stefani A, Bruno G, Mutinelli S, Gracco A. COVID-19 Outbreak Perception in Italian Dentists. *International Journal of Environmental Research and Public Health* Article. doi:10.3390/ijerph17113867
- [10]. Grech V, Gauci C, Agius S. Vaccine Hesitancy Among Maltese Healthcare Workers Toward Influenza and Novel COVID-19 Vaccination. *Early Human Development*. Published online 2020. doi:10.1016/j.earlhumdev.2020.105213
- [11]. Grech V, Gauci C. Vaccine Hesitancy in the University of Malta Faculties of Health Sciences, Dentistry and Medicine Vis-à-Vis Influenza and Novel COVID-19 Vaccination. *Early Human Development*. Published online 2020. doi:10.1016/j.earlhumdev.2020.105258
- [12]. Tamang N, Rai S, Dhungana S, Rai P, Sherchan B, Shah B. COVID-19: A National Survey on Perceived Level of Knowledge, Attitude and Practice among Frontline Medical Professionals in Nepal. Published online July 30, 2020. doi:10.21203/rs.3.rs-40299/v1
- [13]. Coronavirus Disease (COVID-19) Situation Report – 198. World Health Organization; 2021:3. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200805-covid-19-sitrep-198.pdf?sfvrsn=f99d1754_2. Accessed February 23, 2021.
- [14]. Blumenfeld Z. Possible Impact of COVID-19 on Fertility and Assisted Reproductive Technologies. *Fertility and Sterility*. 2020;114:56-57. doi:10.1016/j.fertnstert.2020.05.023
- [15]. COVID-19 Vaccine and Infertility: Baseless Claims and Unfounded Social Media Panic | Fertility and Sterility Dialog. Accessed February 20, 2021. <https://www.fertstertdialog.com/posts/covid-19-vaccine-and-infertility-baseless-claims-and-unfounded-social-media-panic>
- [16]. Robertson E, Reeve KS, Niedzwiedz CL, et al. Predictors of COVID-19 Vaccine Hesitancy in the UK Household Longitudinal Study. medRxiv. Published online January 2, 2021:2020.12.27.20248899. doi:10.1101/2020.12.27.20248899
- [17]. Lin Y, Hu Z, Alias H, Wong LP. Influence of Mass and Social Media on Psycho-Behavioral Responses Among Medical Students During the Downward Trend of COVID-19 in Fujian, China: Cross-Sectional Study. *Journal of Medical Internet Research*. 2020;22(7):e19982. doi:10.2196/19982