The Impact of Covid-19 vaccinations on the wellbeing of doctors Worldwide

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Abstract

Objectives: Personal-wellbeing among healthcare personnel is a complex matter. This study was conducted to evaluate the impact of Covid-19 vaccination on the personal well-being of doctors.

Setting: We shared the survey with doctors on FacMedicine.com.

Participants: We analyzed the data of 1679 doctors from different countries who completed the published questionnaire. The collected data included age, gender, continent, country income, specialty, career level, and the number of working hours.

Results: Age distribution had no significant impact on PWS (p= 0.583). Nevertheless, the same score showed a significant rise in the males compared to females. Specialty, working hours, and continent distribution did not show a significant association with the same score. Higher medical career levels were associated with higher PWS. We noted higher PWS in high and lower-middle income countries (p= 0.035) compared to the other two types (low and upper-middle). Although Covid-19 infection was associated with a significant decrease in PWS (p < 0.001), vaccination did not show any significant impact on the same score (p= 0.085).

Conclusion: Covid-19 vaccination has no significant impact on personal-wellbeing. However, female gender, redeployment, lower income, previous infection, and lower career level are associated with a significant decrease in the same parameter.

Patient and Public Involvement: No patient involvement.

Ethics Approval: Our research is based on an online survey openly accessible to all doctors on FacMedicine.com and “Faculty of Medicine” Facebook page and so does not require ethics approval. It did not collect any personal identifiable information and participants were aware about our purpose from the survey with introduction page. By clicking on the survey link and completed the survey, participants were giving consent to take part in this anonymous survey. We hope that clarifies why there is no ethical approval required for this online survey.

Introduction

Medical staff and allied healthcare professionals are continuously exposed to both physical and psychological strain. This will exacerbate any existing baseline of psychological pathology and low morale in the healthcare industry in many countries [1-3].

The coronavirus disease pandemic of 2019 (Covid-19) has become the world's most serious health issue of our time [4]. This new viral virus has spread to almost every region in the world, regardless of country, socioeconomic level, or race [5, 6]. The severity of the disease's consequences, as well as its high fatality rate, necessitate hospitalization and specialized care for patients [7].

In these circumstances, healthcare workers may be one of the most...
vulnerable populations to the pandemic. They must deal with one of the pandemic's great paradoxes: while the general public is advised to stay at home and avoid social interaction, healthcare workers must continue to work in direct contact with the virus and be exposed to it on a regular basis [8].

This, together with the scarcity of personal protective equipment, has made them one of the most infected groups [9]. Additionally, healthcare workers are in a unique position since they must offer medical care while also making complex ethical and moral considerations [10]. As a result, frontline healthcare professionals who are exposed to COVID-19 are at significant risk of having poor mental health and may require psychological treatment [11].

Attempts to manufacture vaccines to combat the COVID-19 pandemic have been made since early 2020 [12]. COVID-19 infection, mortality, and hospital admissions have all been demonstrated to be reduced by the produced vaccinations [13, 14]. This should (in theory) have a significant positive impact on psychosocial wellbeing [15, 16].

The current study was conducted to evaluate the impact of Covid-19 vaccination on the personal well-being of healthcare professionals.

**Methods**

This is a prospective observational study that was conducted over the period of six months during the era of the Covid-19 outbreak. The planned questions were published on FacMedicine.com the largest online forum for verified international doctors on the web with an average of 7 million visitors yearly and 1.5 million followers on social media. No one was obliged to fill the question form; only participants who wanted to share their experience with wellbeing during the outbreak and filled all questions were included. We excluded participants who did not complete the question form.

Finally, a total of 1679 doctors from different countries completed the proposed questions and were included in the study. Their confidentiality was ensured, and the collected data were used only for scientific purposes.

The collected data included age, gender, continent, country income, specialty, career level, and the number of working hours per week. Additionally, their impressions regarding the effect of the vaccine on wellbeing, healthcare actions during the Covid outbreak, and burnout problems were also recorded with numbers from 0 to 3, 0 for complete disagreement, and 3 for complete agreement. The participants were also asked about solutions or suggestions to enhance doctor wellbeing during the Covid outbreak from their point of view.

Then, their well-being was assessed via the Personal Wellbeing Score (PWS) questionnaire (figure 1) [17]. It includes four questions; each of them could be answered as 0 for disagree, 1 for neutral, 2 for agree and 3 for strongly agree. The PWS is calculated by adding the scores of the four questions, leaving a score ranging between 0 and 12. A higher score indicates better personal wellbeing.

![Figure 1: Personal Wellbeing Score (PWS) questionnaire](image)

**Statistical analysis**

The data collected were coded, processed and analyzed with SPSS version 27 for Windows® (Statistical Package for Social Sciences) (IBM, SPSS Inc, Chicago, IL, USA). Qualitative data were expressed as number (percent). The Kolmogorov-Smirnov test tested quantitative data for normality. Data were shown as median ± SD and median (range). To compare two independent groups with parametric quantitative data, independent samples (student’s) t-test was used, and Mann-Whitney U-test was used if the data were non-parametric. To compare three independent groups with parametric quantitative data, one-way analysis of the variance (One-way ANOVA) was used, and the Kruskal Wallis test was used if the data were non-parametric. For all tests, P values <0.05 are considered significant.

**Results**

Table 1 illustrates the demographic data of the included doctors. Doctors whose ages ranged between 30 and 39 years represented 28.4% of the included participants, which was the largest among age groups included. Males and females nearly showed equal distribution (49.4% and 50.3%, respectively), while five doctors (0.3%) preferred not
to disclose their gender.

We included doctors from the different continents, but Asian doctors had the greatest share (52.5%), followed by Africa (21.5%). Regarding country income, most of our participants were from lower-middle-income countries (59.1%), followed by upper-middle-income ones (23.2%).

Table 2 shows the work-related data of the study doctors. We included different medical specialties, mainly family medicine (26.8%), internal medicine (24.3%), and surgery (17.3%). Their career level ranged from junior doctors (15.5%) to consultants (33.1%), and their working hours varied from less than 20 hours to 50 or more working hours per week. PWS had a mean value of 7.95, and it ranged between 0 and 12, as illustrated in Table 3.

Previous Covid 19 infection was reported by 533 participants during the last 2 years (31.7%), while 141 doctors reported that they may have caught this infection (8.4%). As regard vaccination data, it was as follows; two doses (74.6%), only one dose (7%), one dose and waiting for the second one (8.6%), not waiting (6.1%) and never vaccinated (3.6%). Table 4 summarizes the previous data.

According to Table (5), most doctors reported their optimism regarding vaccination development and its subsequent positive impact on their wellbeing. Also, most of them agreed that burnout is a serious problem needing more attention to be well managed. The participants suggested some solutions to improve their wellbeing from their point of view, as shown in Table (6).

Redeployment was associated with significantly lower PWS (p < 0.001), which had mean values of 7.63 and 8.31 in the re-employed and non-reemployed doctors, respectively. We noted higher PWS in high and lower middle income countries (20.1% and 34.5%, respectively). Age distribution had no significant impact on PWS (p = 0.583). Nevertheless, the same score showed a significant rise in the male population compared to females (8.18 vs 7.73 – p 0.002). Both specialty and continent distribution did not show a significant association with the same score (p = 0.784 and 0.611). Also, the number of working hours per week showed no significant association with the same score (p = 0/154). However, higher medical career levels were associated with higher PWS (p < 0.001).
countries (p = 0.035) compared to the other two types (low and upper-middle). Although Covid 19 infection was associated with a significant decrease in PWS (p < 0.001), vaccination did not show any significant impact on the same score (p = 0.085).

**Discussion**

We conducted the current study to elucidate the impact of Covid-19 vaccination on social wellbeing among doctors. We analyzed the data of 1679 doctors from across the world, who responded to our questionnaire. Of note our study showed reduced PWS scores in association with having Covid-19 infection and being redeployed, but an increased PWS scores was noted in those at higher medical career levels and male gender. However, our findings showed no significant impact of vaccination on personal well-being measured by PWS (p = 0.085), either positive or negative. The mean values of that score were almost comparable between doctors who were completely vaccinated (one or two doses), partially vaccinated (one dose), and those who did not receive it. To note the number of respondents who had not been vaccinated was only 3.6%.

Burnout has been identified as a severe problem that has affected about 40 – 75% of healthcare professionals in recent years [18]. In the era of Covid-19, studies showed worsening of personal wellbeing for different healthcare workers [2, 11]. The risk of infection for themselves or their loved ones, as well as increased need for care and a possible shortage of basic personal protection resources, could explain these changes [2, 19, 20]. It is crucial to seek interventions to prevent these problems among doctors in the long term. Surely, this would have a positive impact on their wellbeing and healthcare outcomes.

On the other hand, other studies confirmed the positive, beneficial impact of vaccination on personal wellbeing [16, 21]. They attributed their findings to the effect of vaccination on disease progression. It decreases the risk of infection, and even if get someone gets infected, the symptoms will be less severe. This would give the individual a sense of security once vaccinated or when dealing with vaccinated people [22]. Another point to be considered is that mass vaccination is associated with a decrease in healthcare stringent measurements like lockdown, which had a negative impact on social wellbeing for everyone [23].
Finally, because vaccination has been shown to improve economic recovery, the increase in employment that results may relieve people's financial stress, thus enhancing their psychological wellbeing [15, 16].

Although our findings do not replicate the previous studies in confirming the beneficial effect of vaccination, it’s worth emphasizing that, in addition to immunizations, there are other factors that influence mental health. Physical health, access to pandemic information, and local government responses are all critical considerations. These variables should also be corrected to reach an optimum improvement of the personal well-being of healthcare workers [25, 26].

Our findings showed that previous Covid-19 infection was associated with a significant decrease in personal wellbeing (p < 0.001). This agrees with Zhu and his colleagues, who reported that doctors who had confirmed Covid infection had more depressive symptoms compared to those who did not [27]. Additionally, others reported that psychosocial distress is more common when quarantined because of a suspected or confirmed infection [28].

Our findings showed that age had no significant impact on personal wellbeing (p = 0.583), as PWS had comparable means among the groups with different age distribution. Our results are in contrast to Kang et al., who reported that strain and burnout were more common in younger workers [29]. These results could be explained by less working experience and a lower sense of preparedness.

**Table 5:** The development of vaccines has had a positive effect on doctors' wellbeing, how much do you agree?

<table>
<thead>
<tr>
<th>Items</th>
<th>Study subjects (N=1679)</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>The development of vaccines has had a positive effect on doctors' well-being, how much do you agree?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>52</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>182</td>
<td>10.8</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>597</td>
<td>35.6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>848</td>
<td>50.5</td>
<td></td>
</tr>
</tbody>
</table>

**Table 6:** Do you have suggestions to enhance doctors’ wellbeing during and after the pandemic

<table>
<thead>
<tr>
<th>Items</th>
<th>Study subjects (N=1679)</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological support, wellbeing programs, gym, yoga and meditation</td>
<td></td>
<td>134</td>
<td>8</td>
</tr>
<tr>
<td>Better financial compensations including salaries, pensions and less taxes</td>
<td></td>
<td>122</td>
<td>7.3</td>
</tr>
<tr>
<td>Improving quantity and quality of medical facilities, supplies, equipment, PPE and safety of workers</td>
<td></td>
<td>107</td>
<td>6.4</td>
</tr>
<tr>
<td>Decreasing workload, working hours, paper work</td>
<td></td>
<td>94</td>
<td>5.6</td>
</tr>
<tr>
<td>Hiring more doctors and healthcare professionals to face the shortage</td>
<td></td>
<td>64</td>
<td>3.8</td>
</tr>
<tr>
<td>More leaves, vacations or breaks</td>
<td></td>
<td>87</td>
<td>5.8</td>
</tr>
<tr>
<td>Making vaccination process faster and easier and adding booster doses especially for HCPs and their families</td>
<td></td>
<td>82</td>
<td>4.9</td>
</tr>
<tr>
<td>Government transparency and support including updating guidelines, improving healthcare and public health system, involving HCPs in decision making not politicians</td>
<td></td>
<td>77</td>
<td>4.6</td>
</tr>
<tr>
<td>Appreciation and recognition</td>
<td></td>
<td>47</td>
<td>2.8</td>
</tr>
<tr>
<td>Enhancing work environment and making rotations to decrease work routine</td>
<td></td>
<td>36</td>
<td>2.1</td>
</tr>
<tr>
<td>Working from home, developing better online consultation system</td>
<td></td>
<td>6</td>
<td>0.4</td>
</tr>
<tr>
<td>Family care</td>
<td></td>
<td>28</td>
<td>1.7</td>
</tr>
<tr>
<td>Society awareness about the disease, social distancing, vaccines .etc.</td>
<td></td>
<td>29</td>
<td>1.7</td>
</tr>
<tr>
<td>Training doctors and HCPs especially juniors, updating guidelines and protocols, conducting research</td>
<td></td>
<td>41</td>
<td>2.4</td>
</tr>
<tr>
<td>Insurance for HCPs, taking care about their physical health with continuous testing and screening</td>
<td></td>
<td>34</td>
<td>2</td>
</tr>
</tbody>
</table>
in young individuals [30]. Other authors reported much distress and depression among healthcare personnel with higher age (older than 50 years) [31]. It appears that there is great heterogeneity in the current literature regarding the relationship between age and personal wellbeing, which needs to be further investigated.

In the current study, female gender was associated with a significant decrease in personal wellbeing (p = 0.002). PWS had mean values of 8.18 and 7.73 in males and females, respectively. In line with our findings, Gong et al. reported that female healthcare staff significantly expressed more stress symptoms compared to male counterparts (OR = 2.23; 95% CI: 1.02 - 4.86; p = 0.043) [32]. Other multiple studies have confirmed the previous findings regarding the female gender [27, 29, 33]. Authors attributed that finding to the fact that women are more vulnerable to affective and anxiety disorders. Additionally, because women are more often in charge of caring for their family members at home than men, independent of their employment workload, women are expected to be more affected by the implications of public actions to restrict the spread of the virus (such as school closures) [34].

In the current study, workers with higher career levels (consultants) expressed significantly higher PWS, indicating improved personal wellbeing compared to lower ones (p < 0.001). Other studies confirmed our findings, as increased working experience (higher career) was protective against burnout and psychosocial distress among healthcare professionals [35]. This is in contrast to a previous study which stated that the levels of stress showed a significant positive association with the educational level of the healthcare workers. Staff with higher educational degrees reported higher levels of stress and burnout (p = 0.017) [32]. Furthermore, an additional study reported that intermediate technical title was a significant predictor for psychosocial problems in healthcare workers (OR 1.77 – p = 0.001) [11].

Our findings showed no significant association between working hours and personal wellbeing (p = 0.154). On the other hand, another study reported that high workload is a significant risk factor of burnout among healthcare workers [36]. Other authors reported that long shift hours was associated with high levels of burnout during the Covid-19 outbreak [37].

In our study, the medical speciality had no significant impact on personal wellbeing (p = 0.784). PWS was almost comparable between the included specialities. A previous Saudi study reported that levels of burnout were the highest among staff working at ICU during the outbreak. The authors also reported a significant decline in burnout among surgeons [38]. Of course, the nature of the outbreak itself has made ICU work more stressful, especially since ICU settings were preserved for severe Covid cases. At the same time, many surgical centres delayed elective surgeries during the outbreak. This could explain the previous results. Due to the nature of the pandemic and the need for mass redeployment it is not surprising that all specialties have similar PWS scores. A previous survey by Faderani et al showed morale to be higher than expected amongst doctors and this may have related to public support for healthcare professionals at the time [20].

Our findings showed higher PWS in high and lower middle income countries (p = 0.035) compared to the other two types (low and upper-middle). Somehow, this indicates that higher socioeconomic status was protective against burnout. We think that life, in general, would be harder in low-income countries compared to high-income ones, and this should reflect itself on personal wellbeing. On the other hand, another study reported that high income was associated with higher burnout among healthcare personnel [39].

Overall, enhancing personal wellbeing in healthcare professionals is a complicated process involving individual experiences interacting with workplace, social and environmental factors.

Our study has some limitations; First of all, we were dependent upon a subjective tool for personal wellbeing assessment. Also, we should have compared PWS before and after vaccination. These cons should be well-handled in future studies. Moreover, as with any survey, our study is limited by the participants who chose to take part. It could be argued that 1627 is a low number of respondents and so it is difficult to know how to interpret our results in the context of being representative for doctors across the world. Our study most likely represents those doctors more engaged with the use of social media and this may exclude other groups.

Conclusion

Based on the previous results, Covid-19 vaccination has no significant impact on personal wellbeing. However, female gender, redeployment, low income, previous Covid-19 infection, and low career level are associated with a significant decrease in an individual’s personal wellbeing score. These risk factors should be taken into consideration when redeploying healthcare professionals and appropriate wellbeing support should be offered.

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