RESEARCH

STUDY TO ASSESS THE REASONS FOR COVID-19 VACCINATION REFUSAL BY HEALTH CARE WORKERS OF L3 LEVEL HOSPITAL

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Abstract

Background: To control the COVID-19 pandemic, the only measure could be vaccination drive among country individuals. Pathetically, immunization refusal has been a common story in the media for well longer than 10 years. The study aimed to enlist the reasons for COVID-19 vaccine refusal among health workers of L3 level hospital and also to study the reasons for COVID-19 vaccination refusal by health care workers of L3 level hospital. To carry out this present study research question, the objectives were to prepare a detail list comprising of refusal reasons and also to find out correlations between refusal reasons and selected demographical variables like age/sex. **Materials and Methods:** The present study consisted of 192 subjects from the Out-Patient Department at the Department of Medicine of Era's Lucknow Medical College and Hospital, Lucknow, U.P. conducted between late December 2020 and March 2021. Informed written consent were obtained from all the study group subjects. A Questionnaire based research design was adopted for this study to assess the reasons for COVID -19 vaccination refusal by Health care workers of L3 level hospital. **Result:** The total study subjects involved in the present project were 192 with the mean age of the study population being 26.33 ± 5.31 years. Majority of the hesitant respondents were females (56.8%). Out of all the 192 healthcare workers involved in the study, maximum (n=75) were from the allied courses followed by paramedical staff (n=61) and clinical doctors (n=56). Out of all the reasons enlisted for refusal of vaccination, sickness (n=51, 26.6%) was the single most dominant reason followed by drug allergy (n=23; 12%), pregnancy (n=18; 9.4%), food allergy (n=12; 6.2%) and lactation (n=8; 4.2%), with 79 respondents giving various other reasons for refusal like parents' denial (n=26), followed by presence of a medical condition (n=18), travel and scheduled appointments for personal/official tasks (n=4 each). A total of 27 respondents had failed to cite any specific reason for refusal. Reasons for refusal showed a significant variation for different age groups, sexes and professional categories ($p<0.001$). In effect, there was a statistically significant difference among different professional categories with respect to reasons for vaccine hesitancy ($p=0.001$). **Conclusion:** Improving intention to vaccinate against COVID-19 in India is influenced by the effectiveness of the vaccine. To retard the progress of the pandemic, it will require acceptance of COVID-19 vaccine along with targeted health communication strategies that effectively reach the populace.

INTRODUCTION

On the last day of the year 2019, World Health Organization (WHO) was informed of cases of pneumonia of unknown origin in Wuhan City, China.[1,2,3,4,5] Initially, the source of disease was completely unknown.[1] Later, novel coronavirus was identified as the cause by Chinese authorities on 7 January 2020 and was named as coronavirus-2019.[2] Within no span of time, this disease spread very rapidly and transformed to an epidemic in China. Retrospective investigations by Chinese authorities traced the link to a food market in Wuhan, where probably the people consumed the meat or animal products infected with coronavirus.[6] The WHO on 11 March 2020, announced coronavirus disease 2019 (COVID- 19) as global pandemic and attributed the pneumonia symptoms to severe acute respiratory syndrome as the main factor.[1,2,3] The virus is as called due to its presentation of crown like projection on its surface.[4] The first case of COVID-19 infection in India was reported on January 27, 2020, when a female presented to the General Hospital with a one-day history of dry cough and sore throat in Thrissur, Kerala.[7]

Medical doctors around the World including India faced many difficulties as the line of treatment was totally unknown. During the initial days of epidemic and pandemic, the mortality rate was very high. Countries adopted various kinds of treatment including hydroxychloroquine in their drug regime as there was very little research available with reference to treatment.[8,9,10] Treatment directed towards the COVID-19 do not directly manifest changes in the virus due to drugs regime, but it is totally to control the neutrophil storm and also cytokine (especially Interleukine-6) storm.[11,12,13,14] Though this regime is thought to alleviate the symptoms and decrease the severity of the disease, nevertheless the steroidal mechanism could attribute to the decrease of CD4 & CD8 cells.[15,16] As the pandemic reached to an uncontrollable stage infecting people at an exponential manner, together with the failure in the drug regime to contain the virus eventually leading to increase in the mortality of the infected individuals, the scientific communities all around the globe planned for vaccine that could mitigate the effects of COVID-19.[17,18]

The need for vaccination is a must to any country's individual to protect oneself from getting infected with COVID-19. To control the COVID-19 pandemic, the only measure could be vaccination drive among country individuals.[19,20] For a country as vast as India, the long-awaited vaccines aim to preserve the health system from further burden as well as protect the health of the people.[21] Pathetically, immunization refusal has been a common story in the media for well longer than 10 years.[22,23] In spite of the fact that there is sparse proof that refusal is really expanding in the populace as numerous investigations have shown concerning examples of decay of trust in immunizations, the clinical experts who control immunizations, and the researchers who examine and create vaccines.[22,23,24,25]

Vaccine aversion reflects worries about the choice to immunise oneself or one's loved-ones.[26] There are variety of components adding to vaccine refusal, including the obligatory idea of immunizations, their adventitious worldly connections to adverse effects results, newness to vaccine preventable sicknesses, and absence of trust in health agencies and government bodies.[27,28,29,30,31]

Therefore, the research question taken for the present study was ''what are the reasons for COVID-19 Vaccine refusal amongst health workers of L3 level hospital" And also to study the reasons for COVID-19 vaccination refusal by health care workers of L3 level hospital''. To carry out this present study research question, the objectives were to prepare a detail list comprising of refusal reasons and also to find out correlations between refusal reasons and selected demographical variables like age/sex.

MATERIALS AND METHODS

The present study consisted of 192 subjects from the out-patient department of Medicine at Era's Lucknow Medical College and Hospital, Lucknow, U.P. The current study was conducted between late December 2020 to March 2021. Informed written consent were obtained from all the study group subjects. A Questionnaire based research design is adopted for this study to assess the reasons for COVID -19 vaccination refusal by Health care workers of L3 level hospital. Inclusion criteria involved those health care workers who refused to be the beneficiary of Covid-19 Vaccination. Exclusion criteria involved health care workers who are the beneficiary of Covid-19 Vaccination.

Stastical Analysis

Data was analysed using SPSS 21.0 (IBM Inc., USA) software. Data has been reflected as numbers (frequency) and percentages (proportions) and mean±standard deviation. Chi-square test has been used for the purpose of analysis. With a confidence level of 95%, 'p' value less than 0.05 depicts a statistically significant association.

RESULTS

Age of hesitant respondents ranged from 19 to 45 years. Majority of them (55.7%) were aged >24 years. Mean age of respondents was 26.33±5.31 years. Majority of them were females (56.8%). With respect to professional category, maximum (n=75; 39.0%) were categorized as allied professionals

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followed by paramedicals (n=61; 31.8%) and clinical doctors (n=56; 29.2%) respectively. The single most dominant reason for refusal/hesitancy was sickness (n=51; 26.6%) followed by drug allergy (n=23; 12%), pregnancy (n=18; 9.4%), food allergy (n=12; 6.2%) and lactation (n=8; 4.2%). One of the respondents was on leave (0.5%). Maximum number of respondents cited other variable reasons for refusal (n=79; 41.1%) [Table 1]. Among those citing other reasons, the most common cited reason was parents' denial (n=26), followed by presence of a medical condition (n=18), travel and scheduled appointments for personal/official tasks (n=4 each). A total of 27 respondents had failed to cite any specific reason for refusal.

Reasons for refusal showed a significant variation for different age groups, sexes and professional categories ($p<0.001$). Amongst older respondents (>24 years), the dominant reasons for refusal were sickness (32.7%), pregnancy/lactation (20.5%) and refusal due to other reasons (28.0%) whereas in the younger age group (18-23 years), refusal for other reasons (57.8%) was the most dominant reason followed by sickness (18.8%) and drug allergy (12.9%) respectively. Among males, refusal for other reasons (60.2%) was the most dominant reason followed by sickness (21.7%) and drug allergy (12%) however among females, sickness (30.3%) was the most dominant reason followed by refusal for other reasons (26.6%) and pregnancy/lactation (23.8%). With respect to professional categories, among clinical doctors and allied professionals, though refusal for other reasons was the most dominant reason yet it was higher in allied professionals (54.7%) as compared to that in clinical doctors (37.5%). On the other hand, among paramedical professionals, sickness (31.1%) followed by pregnancy/lactation and refusal for other reasons (27.9% each) were the most common reasons. On the contrary, pregnancy/lactation were the reasons for refusal in only 1.8% of clinical doctors and 10.7% of allied professionals respectively. In effect, there was a statistically significant difference among different professional categories with respect to reasons for vaccine hesitancy ($p=0.001$) [Table 2].

Table 1: Demographic Profile, Characteristics and Refusal Reasons among study population

S. No.	Characteristics	Frequency	Percentage
1.	Age		
	18-23 Years	85	44.3
	≥24 Years	107	55.7
	Mean age ± SD (Range) in years	26.33±5.31 (19-45)	
2.	Sex		
	Male	83	43.2
	Female	109	56.8
3.	Professional categories		
	Clinical doctors	56	29.2
	Allied staff	75	39.0
	Paramedical staff	61	31.8
4.	Reasons for refusal (Most dominant in case of multiple reasons)		
	Pregnancy	18	9.4
	Lactation	08	4.2
	Food allergy	12	6.2
	Drug allergy	23	12.0
	Sickness	51	26.6
	Leave	01	0.5
	Others	79	41.1

Table 2: Association of Different Reasons with profile of Hesitant Population

S. No.	Characteristics	Pregnancy	Lactation	Food Allergy	Drug Allergy	Sickness	Leave	Others	Statistical significance
1.	Age								
	18-23 Years (n=85)	3 (3.5%)	1 (1.2%)	4 (4.7%)	11 (12.9%)	16 (18.8%)	1 (1.2%)	49 (57.8%)	$\chi2=24.22$; $p<0.001$
	≥24 Years (n=107)	15 (14.0%)	7 (6.5%)	8 (7.5%)	12 (11.2%)	35 (32.7%)	0	30 (28.0%)	
2.	Sex								
	Male (n=83)	0	0	4 (4.8%)	10 (12.0%)	18 (21.7%)	1 (1.2%)	50 (60.2%)	$\chi2=35.86$; $p<0.001$
	Female (n=109)	18 (16.5%)	8 (7.3%)	8 (7.3%)	13 (11.9%)	23 (30.3%)	0	29 (26.6%)	
3.	Professional Category								
	Clinical doctors (n=56)	0	1 (1.8%)	7 (12.5%)	9 (16.1%)	18 (32.1%)	0	21 (37.5%)	$\chi2=34.02$; $p=0.001$
	Allied staff (n=75)	5 (6.7%)	3 (4.0%)	2 (2.7%)	9 (12.9%)	14 (18.7%)	1 (1.3%)	41 (54.7%)	
	Paramedical staff (n=71)	13 (21.2%)	4 (6.6%)	3 (4.9%)	5 (8.2%)	19 (31.1%)	0	17 (27.9%)	

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DISCUSSION

The findings of the study showed emergence of non-classified reasons (others) to be the most common factor resulting in vaccine refusal. Among classified categories sickness and pregnancy/lactation emerged the most common reasons for vaccine refusal while drug and food allergy together also seemed to affect nearly one-fifth of the vaccination denials. It was also interesting to see that the demographic factors like age and sex as well as professional category seemed to determine the vaccine refusal. A dominance of refusal for other reasons in the younger respondents and emergence of parental denial as the most common reason in this category also highlighted the role of parents in determining the vaccination decisions. From the strategic point of view, these findings pose a challenging task for the policy-makers to offer motivation for vaccine acceptability as the reasons for vaccination denials seem to be influenced by all the factors (age, sex and professional category) studied, thus showing that to increase the vaccination acceptability the policy makers should come up with different strategies for different demographic and professional groups. No doubt, this is a daunting task for the policy-makers. The emergence of other reasons for refusal among more than one-third of hesitant population also raises a question mark over the policy to allow voluntary vaccination while we talk about the zero-tolerance for COVID-19 spread. These observations of ours are in agreement with the Machingaidze and Wiysonge,[32] who also observed that the reasons for COVID-19 vaccine acceptance and hesitancy remain complex. One of the reasons for this complexity is the mutating CoV-2 variants as well as lack of any substantial long-term data on the safety and effectiveness of COVID-19 vaccination, especially in view of the early experience of COVID-19 vaccination which showed susceptibility as well as fatal outcomes even in fully vaccinated persons, especially medical professionals.[33,34,35] It must also be highlighted that vaccine hesitancy is not only related with the imminent or objective reasons but is also related with "lack of confidence in vaccine safety, concerns about side effects and efficacy, and distrust in common sources of vaccine-related information".[36]

The task to achieve 100% vaccination against COVID-19 becomes a really daunting and challenging one owing to variation in profile of vaccine hesitant population and reasons cited for such hesitation in different ethnic and demographic groups. While the present study found a dominance of those in older age (>24 years) in our set of vaccine hesitant population, Moseet al.[37] in a recent study from Ethiopia found younger medical professionals (<23 years) to be 1.9 times more likely to be vaccine hesitant as compared to their older counterparts. However, with respect to dominance of females as vaccine hesitant population, the findings of the present study are in agreement with them. However, in yet another study from Ethiopia conducted among healthcare professionals, vaccine hesitancy was higher in males (35.6%) as compared to that in females (26.3%). However, they also found it to be more prevalent in older (>35 years) (40.6%) as compared to younger (31.2%) professionals.[38]

Contrary to findings of the present study, where age, sex and professional category showed a significant association with reasons for vaccine hesitancy, Joshi et al.[39] failed to find a significant association of vaccine hesitancy with all these variables. However, Saini et al.[40] in their study found multiple factors, including sex and professional category to be significantly associated with vaccine hesitancy. In another study, Rao et al.[41] also found influence of sex, age as well as professional category on the reasons for vaccine hesitancy as observed in the present study.

These differences in profile of vaccine hesitant healthcare professionals and reasons for such hesitation eventually highlight the complexity and context specificity of vaccine hesitancy and its dependence on time, place, and vaccines. All these decisions are influenced by factors such as complacency, convenience and confidence.[42] Numerous other factors like perceived and confirmed COVID-19 infection history, misinformation, religious views, unknown short and long-term effects of the vaccine and undefined length of time of vaccine´s protection are also determinants of vaccine hesitancy that still remain rather unexplored.[43,44]

The findings of the present study are interesting and provide some deep insight related with profile and reasons of vaccine hesitant healthcare professionals. In view of the zero-tolerance policy towards COVID-19, it is essential that vaccine hesitancy and factors related with it should be studied extensively and appropriate strategies should be formulated to remove the barriers in the way of vaccine acceptance. While safety and efficacy of the vaccine remain as the dominant underlying reason, more studies related with the safety and efficacy of vaccine should be carried out and duly communicated to healthcare professionals and general masses to increase the acceptability of vaccine.

The present study is not beyond any limitation. Limitation of information about COVID-19 vaccine safety, effectiveness, or cost, these estimates of vaccination intentions and reasons for refusal could change, once more studies like ours provides relevant data to identify the reasons of vaccine refusal in India. With proper health strategies, the reasons identified could be used by the public health expert agencies to prepare effective methods to remove the vaccine hesitancy.

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CONCLUSION

Improving intention to vaccinate against COVID-19 in India is influenced by the effectiveness of the vaccine. To retard the progress of the pandemic will require acceptance of COVID-19 vaccine along with requirements of targeted health communication strategies that effectively reach the population. With scientific evidence, the acceptance to vaccinate is relatively high when the vaccine has a very high effectiveness, but the acceptance is reduced when the vaccine efficacy is low.

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