Original Research Article

The Impact of Framing on Attitudes Towards Vaccination in an Indian Sample

Pallari Gajaria[1], Suyash Karangutkar[1], Meghna Menon[1], Aankeet Gokkalgandhi[2]

[1]Masters Students of Applied Psychology, Department of Psychology, Vivekanand Education Society's College of Arts, Science and Commerce, Chembur, Mumbai, India.
[2]Assistant Professor of Psychology, Vivekanand Education Society's College of Arts, Science and Commerce, Chembur, Mumbai, India.
Corresponding author: Pallari Gajaria
Email – gajariapallari@gmail.com

ABSTRACT

Introduction: Vaccines have emerged as a ray of hope in our battle against Covid-19. That as the backdrop, this research was aimed at studying how the framing of messages impacts attitudes of Indians towards Covid-19 vaccines. The hypothesis was that the perceived norms about taking the vaccine will influence participants' reported intentions to take the Covid vaccine. That is, exposure to a message indicating how willing or unwilling other Indians are to get vaccinated for the Covid-19 disease, will bring about a change in the beliefs and behavioural intention of the participants which will be in line with the message.
Methodology: A between-subjects design was used. Participants (N=125. M=56, F=69) were randomly assigned to either of the two levels - positive or negative. Participants were pro-vaccines in general and between 18 to 30 years. A seven-point Likert scale was used to measure participants' willingness to take the vaccine, once it is commercially available.
Results: Data was found to be not normally distributed. Wilcoxon Rank Sum Test was used. The Median score was 6 and 5 for level 1 and level 2, respectively. The obtained difference between the two groups was insignificant. Descriptive data was found to be in line with the hypothesis.
Conclusion: Statistical significance was not found in the impact of framing on the participants in this study. In qualitative responses, groups expressed concerns over vaccines. Respondents from the negative framing group, agreeing to take the vaccine, could have been due to the social desirability bias.

Keywords: Vaccination, Framing Effect, Covid-19, Attitudes

(Paper received – 5th October 2021, Peer review completed – 5th November 2021)
(Accepted – 18th November 2021)

INTRODUCTION

Over the years, vaccines have played an important role in the management of public health. Apart from providing individual protection for the ones being vaccinated, they also provide community protection by reducing the spread of diseases within a population [1]. According to the World Health Organization (WHO), vaccines lead to protection against related diseases, prevent cancer, prevent the development of antibiotic resistance, extend life expectancy, among other benefits [2]. A study estimating and mapping vaccine confidence for 149 countries between 2015 and 2019 reported low vaccine confidence for much of Europe, including France and Poland. In Southeast Asia, Japan ranked among the countries with the lowest confidence in vaccines [3]. The Strategic Advisory Group of Experts (SAGE) on Immunization in a November 2011 meeting requested to set up a working group on vaccine hesitancy after reports on public reluctance came from developed as well as developing countries (Report of The SAGE Working Group on Vaccine Hesitancy). The SAGE Vaccine Hesitancy Working Group defines vaccine hesitancy as "a delay in acceptance or refusal of vaccines despite availability of vaccination services. Vaccine hesitancy is complex

and context-specific, varying across time, place, and vaccines and includes factors such as complacency, convenience, and confidence" [4]. The report also stated that when communication – a factor, not a determinant of vaccine hesitancy – is poor or inadequate, it can negatively influence vaccination uptake and contribute to vaccine hesitancy [5].

The Framing Effect on messages refers to the impact of information or messages on the related response of the people, based on the manipulation of the valence (positivity or negativity) of information or message; and there is empirical evidence to suggest that the framing of a message does play a role in the decision-making process [6]. Kahneman and Tversky demonstrated this effect with the help of their Asian Disease problem, where one set of participants received a positively framed message in terms of the gains of a program in combating a fictional disease. Another set of participants received the same problem framed in terms of the losses of the program in combating this fictional disease [7]. What they found was participants choosing the risk-aversive (avoiding risks) option when they are framed positively and risk-seeking (risk inclined) option when they are framed negatively [8].

The development and testing of vaccines are conveyed to the general public through messages (that employ frames) that are of different types, such as media frame, emphasis frame, equivalency frame [9]. As demonstrated by Kahneman and Tversky, people tend to avoid risks when they consider gains or benefits, but prefer taking risks when they consider losses or costs [10]. The study conducted by Palm, Bolsen, and Kingsland (2020) in the USA reported a strong impact of descriptive social media on the perception and intentions of vaccines. Another study conducted in the USA and the United Kingdom [11], confirmed that the choice of frames led to information leakage since readers gauge the attitudes towards vaccination through these frames.

At the time of conducting this study, the Government of India had rolled out Covishield and Covaxin for the Indian population in a bid to combat the covid-19 disease. While the vaccination was in its initial stages, medical and other essential services professionals were being inoculated in this stage. And since the vaccines were fairly new at the time, it served the researchers' purpose to understand the impact of framing on the attitude towards these vaccines, especially among the youth. It is crucial to note that the second wave of the disease had not hit at the time, although a steady rise in the number of cases was being reported from January 2021. Eventually various states in India witnessed another set of lockdown restrictions to curb the spread from April of 2021. With new vaccinations being formulated in a short period and certainly many more factors playing a role, the perceived safety of these vaccinations has been of great interest to researchers. Several meta-analyses of the scientific literature have enabled us to better understand the concept and reasons for vaccine hesitancy.

Sweileh (2020) reviewed 2791 studies that were published between 1990-2019, concentrating on bibliometric understanding of peer-reviewed research on vaccine hesitancy [12]. What the study discovered were several factors that were found to be contributing to hesitancy about vaccines based on what the disease was. The study also found that the fears pertaining to how safe the vaccine was contributed to hesitancy. The study concluded that there was an overwhelming reason for hesitancy because of fears about the safety of the vaccines.

Another study was conducted by Kerr et al (2020); analyzed 25 national samples from different countries [13]. The study concentrated on factors that affect the acceptance of a vaccine. According to the results achieved, a consistent predictor for vaccine acceptance was the trust of the candidates in the experts. Here, the experts were the scientists, researchers, and developers that worked on the formulation of the vaccination.

A review of over 2500 articles in several languages was conducted by Karafyllakis & Larson, (2017). Different concerns for different vaccines were discovered, for example, while perceived adverse events described for Human Papillomavirus (HPV) vaccination were often long-term and severe, those for influenza vaccination were milder and often consisted of the beliefs that the vaccine causes flu-like symptoms [14]. In their meta-analytical study, Yaqub et al. (2014) found that vaccine hesitancy was a common phenomenon that was showcased by medical experts, healthcare workers, and the general population [15]. Vaccine hesitancy was mainly due to the suspected adverse effects which led to questions regarding the safety of the vaccines.

Descriptive social norms refer to one's perception of what most others do. One's perception of what others approve of and do differ based on the situation. Descriptive social norms make people act via social information—in particular, social information about what is likely to be adaptive and effective conduct in the setting [16]. If the perception of an individual is that everyone around them is not doing it, they would want to act on it since not many people are engaging in the act [17]. With reference to a flu vaccine, social influence and conformity were found to be common reasons for getting inoculated [18], whereas with HPV, social norms were found to be crucial in predicting vaccination intention [19].

Dror et al (2020) conducted a survey to evaluate vaccination compliance rates amongst the Israeli populations [20]. They attempted to collect data based on the occupation, prior exposure to other vaccinations like influenza, exposure to either suspected or confirmed SARS-CoV-2 patients. They witnessed a high rate of vaccine hesitancy among medical staff. Many responders who mentioned their non-compliance with recommended vaccinations had expressed concerns regarding the safety of a rapidly-developed vaccine. In contrast, responders who were considering themselves to be at a higher risk of disease showcased high compliance and acceptance of the vaccine.

Mannan and Farhana (2020) conducted a cross-sectional study and the results of their study revealed that two-thirds of respondents, worldwide, were at least moderately worried about a widespread COVID-19 outbreak [21]. The differences in rates of acceptance of the virus ranged from almost 93% (in Tonga) to less than 43% (in Egypt). Interestingly, the researchers observed a pattern in the responses, with participants showing a greater trust in the information that was obtained from the government sources.

A plethora of information has been presented globally with reports ranging from side effects to possible cures, how the virus affected millions and more. In a study conducted by Dubé et al (2013), vaccines were unrightfully thought of to be related to the cause of autism in children [22]. A study conducted by Nielsen and Schroder, (2014) stated that information from media, especially social media, is not worth relying upon. The social media sites have eventually become sources of unreliable information [23] [24]. The highest acceptance towards the vaccine was shown by the highly educated people of India in a survey conducted globally which began in June 2020 [25]. There were patterns of mistrust, conspiracies, and rumours about the prevalence of the vaccines amongst the less educated and illiterate population. According to such surveys, another factor causing vaccine hesitancy could be the availability of very limited information pertaining to the side effects of vaccines that are positive in nature [26] [27]. Rumours could also be a contributing factor. For instance, people assume that the effect of the vaccine would be linked to a person's untimely death [28].

The scientific literature points to existing research gaps, such as a lack of detailed information on vaccine hesitancy, patient-provider communication, and vaccination information sources in India. Our research, therefore, focuses specifically on the impact of framing on attitude towards vaccination against COVID – 19.

METHODOLOGY

For the present study, the researchers hypothesized that the perceived norms about taking the vaccine will influence participants' reported intentions to take the Covid-19 vaccine. That is, exposing participants to a message that indicates how willing or unwilling other Indians are to get vaccinated for the Covid-19 disease will bring about a change in the beliefs and behavioural intention of the participants that will be in line with the message. For instance, when exposed to a message indicating that other Indians are willing to take the vaccine (positively framed message), participants will also indicate a greater intention of taking the vaccine.

The method of convenience sampling was employed. The sample for this study consisted of individuals who are pro-vaccinations, in general, for metropolitan cities of India like, Mumbai, Hyderabad, Bangalore, New Delhi, etc. The team confirmed the pro-vaccination inclination of the participants before recruiting them for the study via polls through online social media platforms, such as Instagram, LinkedIn, and WhatsApp. Individuals for the study were in the age group of 18 years to 30 years. Medical and Psychology students were excluded from the sample.

A total of 125 pro-vaccination participants – 56 males and 69 females - were recruited. A between-subjects design was employed and the participants were randomly assigned to one of the two groups (that is, the

positive framed group and the negatively framed group) using the website www.randomizer.org. The team employed Google forms, 1 each with 3 pages created for the two groups. Group 1 with a positively framed message had a total of 62 participants, while group 2 with a negatively framed message had a total of 63 participants.

The frames consisted of factual general information on the impact of corona virus, followed by two positive facts and two negative facts to neutralize the information. Subsequently, the frames were inserted to influence the participants. Group 1 (positive framed) was informed that "most people whom we surveyed (close to 700 out of 1000, all Indians) indicated that they would be taking the vaccine once it is commercially available", while group 2 (negative frame) was informed that "many people whom we surveyed (close to 300 out of 1000, who are all Indians) said that they would hesitate to take the Covid vaccine once it is available commercially".

A seven-point Likert scale was used to measure participants' willingness to take the vaccine, once it is commercially available. The order of the scale was as follows: not at all likely (1), most unlikely (2), more or less unlikely (3), undecided (4), more or less likely (5), most likely (6), and very likely (7) - was used for recording participant responses. After responding on the scale, participants were asked to state their reasons for wanting or not wanting to take the covid-19 vaccine.

Page 3 of the Google Forms consisted of debriefing for the participants.

RESULTS

Table 1. Median & Mean of the dependent variable in the two conditions

	N	**Median**	**Mean**	**p value (>.05)**
Group 1 (Positive framing)	62	6	5.306	0.2099 (NS)
Group 2 (Negative framing)	63	5	5.095	

According to the data acquired from Group 1 (positive frame), the median score was six. The average score of the participants in Group 1 was 5.306. Similarly, for Group 2 (negative frame), the median score was 5 and the average score of the participants in group 2 was 5.095.

Although the descriptive data is in line with the hypothesis prescribed, the inferential data achieved through the Wilcoxon Sum Rank Test indicates that it is not finding support for the hypothesis of the researchers. This could be because the researchers had used a single-item measure for this study.

A non-parametric Wilcoxon rank-sum test for independent samples was used as the DV was ordinal and the p-value was 0.2099 (>.05) indicating that the obtained difference was insignificant.

DISCUSSION

According to the data yielded, a statistically significant difference between the two levels does not exist. This means that there was no significant impact of the framing effect on the participants of the study. Along with a 7-point Likert-type scale, participants were presented with an open-ended question to state their reasons for wanting or not wanting to take the vaccine, which could help researchers to understand the reason for their scoring. There were certain patterns in the participants' responses to this question. With the positive framing group, certain responses indicated that the respondents had not decided if they were going to take the Covid-19 vaccine once it was commercially available. The responses stated that they needed assurance over the effectiveness of the vaccination and that it would not have a side effect, a factor that they stated would make them trust more in its formulation. Noting that, there was not one response below the rating of 4 (undecided).

The qualitative responses of these participants indicated that they were not sure about the safety of the vaccines. However, the respondents who were willing to take the vaccine mentioned that there would be no

harm in taking the vaccine. There was a consistent mention of how the vaccine would enable them to move around unafraid. Recurrent mention of the faith of these individuals in scientists and doctors involved in the formulation of vaccines was noted. There was noticeable hope in the responses which indicated that life could be back to "normal" once the vaccines were available for all. However, individuals, who had responded that they were more or less likely to take the vaccination, widely mentioned the conspiracies floating among the public revolving around the vaccine. They questioned the authenticity and safety of the dosage they will receive. A respondent wanted some solid assurance from a third party that could scientifically approve the safety of the vaccine. It was clear that all the respondents wanted to take the vaccine because they wanted to be immune to Covid-19, carry on their "normal" routines like the pre-pandemic times, and be able to travel freely. Some respondents gave instances of pandemics like smallpox, which have been widely eradicated with the help of vaccines.

The respondents from the negative framing group had a mixed review of the safety of vaccines. It was evident that the negative framing of statements was effective on some individuals. There were mentions of how's, what's, and why's of the vaccine being 5 percent ineffective. Moreover, candidates were not willing to take even the slightest bit of risk of its side effects. These were some reasons mentioned by the participants who rated their probability of getting the vaccine between 'very unlikely 'to 'more or less unlikely'. Individuals who mentioned that they had not decided on whether they could rely on the vaccine were waiting for official authorities to prove that its clinical trials have shown 100 percent success. Some mentioned that they would want to wait until a decent amount of the population has been vaccinated which would enable them to decide better based on the shared experiences of these people. Certain responses indicated that they would take any other vaccine but the Covid-19 vaccine due to the hurry in which it has been formulated and rolled out. On the other hand, respondents from 'more or less likely' to 'very likely' responses for taking the vaccination firmly believed that the vaccination will not harm them. There were consistent mentions of the phenomenal abilities of the individuals involved in the making of the vaccine. These individuals believed that the vaccine would help them improve their immune system which would help fight the Covid-19 virus.

Overall, to summarize all the responses, both the groups largely mentioned the urgent formulation of the vaccine which made them question the credibility and efficacy of it along with its long-term effects. Another reason for respondents agreeing to take the vaccine, despite the negative framing, would be due to the social desirability bias.

The researchers would like to conclude with these responses that the positive framing group responded to the framing effect positively and effectively. However, certain factors would have affected the responses of the negative framing group. An important criterion for sampling was to collect data only from individuals who were pro-vaccines in general, so they could be manipulated by the frames. This could have widely affected the responses. Being pro-vaccines, the beliefs of and support towards vaccinations among these individuals could have shaped their responses, making them believe that the covid-19 vaccine will benefit them. This study was conducted online and there is constant and absolute access to news and data available to everybody. The inflowing information about the vaccines through various media portals could have influenced the responses as well. This study, as a conclusion, made the researchers believe that individuals that are pro-vaccines trust the process and abilities of the researchers, scientists, and healthcare workers, even if it has side effects.

Limitations

The researchers have identified certain limitations to this study. Apart from the framing effect being tested, there were certain other factors that could have had an impact on responses of the participants. Personality traits, such as conservatism versus liberalism, might be related to attitudes towards vaccination, but were not accounted for in the present study. The sample consisted of people who had access to the internet and were familiar with Google forms as a tool. The present sample does not cover those who are not well-versed with the technology, therefore making the sample unrepresentative. There also stands a possibility that as the data was recorded online, participants were susceptible to the social desirability bias while responding. This bias could have been measured with the use of the Marlowe Crowne Social Desirability Scale. Lastly, the study was also limited to one variable, as a result of which an in-depth analysis of other factors that would've influenced the responses could not be performed.

CONCLUSION

Scientifically learning about people's attitudes towards vaccination drives and adjusting affecting variables, such as, how the vaccines are advertised, the way in which the awareness campaigns of the drives are framed, etc., will give a better understanding of creating an effective promotional drive and advertisement strategy. Furthermore, understanding about the effects of framing can help implement the suitable strategies for further vaccination drives. Covid-19 vaccines were the focal point of this study; however, the same study can be conducted to understand people's attitudes towards other vaccines as well. This research will help in further delving into the specifics of the vaccine hesitancy, strengthening efforts in countering vaccine hesitancy and/or dealing with it with factual information to bring about awareness about how vaccines can contribute in shielding mankind against diseases. While studies related to vaccination and people's hesitancy towards them are catching a pace lately, there can be many cognitive biases playing a role in the decisions made by people which can be focused upon and researched moving forward.

The study enabled a deeper insight into the attitudes of people towards the Covid -19 vaccine. This helped the researchers conclude that individuals are aware of things happening around them which make the formation of opinions easier. These opinions may be highly affected by society and the trends followed. These individuals, although questioning the authenticity, credibility, and efficacy of the vaccine, did not lose their trust in the scientific methods and officials working at the forefront. Despite the opinions of people surrounding the vaccine, they consider taking a commercially available vaccine as their social responsibility and also a desperate urge to bring life back to normal.

REFERENCES

1. Orenstein WA, Ahmed R. Simply put: Vaccination saves lives. Proc Natl Acad Sci 2017;114(16):4031–3.
2. Andre FE, Booy R, Bock HL, Clemens J, Datta SK, John TJ, et al. Vaccination greatly reduces disease, disability, death and inequity worldwide. Bull WHO 2008;86:140-6.
3. De Figueiredo A, Simas C, Karafillakis E, Paterson P, Larson HJ. Mapping global trends in vaccine confidence and investigating barriers to vaccine uptake: a large-scale retrospective temporal modelling study. Lancet 2020; 396(10255):898-908.
4. Hickler B, Guirguis S, Obregon R. Vaccine Special Issue on Vaccine Hesitancy. Vaccine 2015;33(34):4155-6.
5. MacDonald NE. Vaccine hesitancy: Definition, scope and determinants. Vaccine 2015;33(34):4161-4.
6. Ferguson E, & Gallagher L. Message framing with respect to decisions about vaccination: The roles of frame valence, frame method and perceived risk. Br J Psychol 2007;98(4):667-80.
7. Bless H, Betsch T, Franzen A. Framing the framing effect: The impact of context cues on solutions to the 'Asian disease' problem. Eur J Soc Psychol 1998;28(2):287-91.
8. Druckman JN. Evaluating framing effects. J Econ Psychol 2001;22(1):91-101.
9. Palm R, Bolsen T, & Kingsland JT. The Effect of Frames on COVID-19 Vaccine Resistance. Front Political Sci 2021;3.
10. Rothman AJ, Salovey P. Shaping perceptions to motivate healthy behavior: The role of message framing. Psychol Bull 1997;121(1):3–19.
11. Altay S, Mercier H. Framing messages for vaccination supporters. J Experiment Psychol:Appl 2020;26(4): 567-9.
12. Sweileh WM. Bibliometric analysis of global scientific literature on vaccine hesitancy in peer-reviewed journals (1990–2019). BMC Pub Health 2020;20(1):1–15.
13. Kerr JR, Schneider CR, Recchia G, Dryhurst S, Sahlin U, Dufouil C, et al. Predictors of COVID-19 vaccine acceptance across time and countries. Med Rxiv 2020.
14. Karafillakis E, Larson HJ. The benefit of the doubt or doubts over benefits? A systematic literature review of perceived risks of vaccines in European populations. Vaccine 2017;35(37):4840-50.
15. Yaqub O, Castle-Clarke S, Sevdalis N, Chataway J. Attitudes to vaccination: a critical review. Soc Sci Med 2014;112:1–11.
16. Cialdini RB. Descriptive social norms as underappreciated sources of social control. Psychometrika 2007;72(2):263-8.
17. Kahan DM. Vaccine risk perceptions and ad hoc risk communication: An empirical assessment. CCP Risk Perception Studies Report No. 17, Yale Law & Economics Research Paper # 491: 2014.
18. Parker AM, Vardavas R, Marcum CS, Gidengil CA. Conscious consideration of herd immunity in influenza vaccination decisions. Am J Prev Med 2013;45(1):118–21.
19. Allen JD, Mohllajee AP, Shelton RC, Othus MK, Fontenot HB, Hanna R. Stage of adoption of the human papillomavirus vaccine among college women. Prev Med 2009;48(5):420-5.
20. Dror AA, Eisenbach N, Taiber S, Morozov NG, Mizrachi M, Zigron A, Sela E. Vaccine hesitancy: the next challenge in the fight against COVID-19. Eur J Epidemiol 2020;35(8):775-9.

21. Mannan DKA, Farhana KM. Knowledge, attitude and acceptance of a COVID-19 vaccine: A global cross-sectional study. Int Res J Business Soc Sci 2020;6(4).
22. Dubé E, Bettinger JA, Fisher WA, Naus M, Mahmud SM, Hilderman T. Improving Vaccination Rates: Vaccine acceptance, hesitancy and refusal in Canada: Challenges and potential approaches. Can Commun Disease Rep 2019;42(12):246-50.
23. Nielsen RK, Schrøder KC. The relative importance of social media for accessing, finding, and engaging with news: An eight-country cross-media comparison. Digital Journalism 2014;2(4):472-89.
24. Vosoughi S, Roy D, Aral S. The spread of true and false news online. Science 2018;359(6380):1146-51.
25. Lazarus JV, Ratzan SC, Palayew A, Gostin L, Larson HJ, Rabin K, et al. A global survey of potential acceptance of a COVID-19 vaccine. Nat Med 2021;2:225–8.
26. Mahmud R, Rahman MM, Rassel MA, Monayem FB, Sayeed SKJB, Islam MS, et al. Post-COVID-19 syndrome among symptomatic COVID-19 patients: A prospective cohort study in a tertiary care center of Bangladesh. PLoS ONE 2021;16(4):e0249644.
27. Jain J, Saurabh S, Kumar P, Verma MK, Goel AD, Gupta MK, Bhardwaj P, Raghav PR. COVID-19 vaccine hesitancy among medical students in India. Epidemiol Infect;2021;149:e132.
28. Kanozia R, Arya R. "Fake news", religion, and COVID-19 vaccine hesitancy in India, Pakistan, and Bangladesh. Media Asia 2021;1-9.

****

Acknowledgements – Nil
Conflict of Interest – Nil
Funding – Nil