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THE POSITIVE AND NEGATIVE IMPACT OF SOCIAL-MEDIA ON PUBLIC PERCEPTIONS AND WILLINGNESS TO VACCINATE AGAINST COVID-19

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ABSTRACT
SM sites have helped spread information during a pandemic in a way that has never been done before in human history. However, when using SM platforms (SMP onwards) during a pandemic, there are many pros and cons. The development of vaccinations and other important medical advances are among the most notable in the world of healthcare. Their acceptance is minimal, and vaccine refusal and hesitancy severely threaten public health. Even though immunization has come a long way in the last century, the World Health Organisation says that some people still do not want to be vaccinated. Health information from different places, like the Internet and social media (SM onwards), can make people less likely to get vaccinated. As technology has improved, so has SM's global influence. Unlike traditional media, SM allows users to create and distribute content globally quickly. Users can pick and choose content streams, increasing ideological isolation. Anti-vaccination messages on these platforms pose severe risks to public health, such as a loss of trust in future vaccine development for new infections like SARS-CoV-2 for COVID-19 protection. In this paper, we look at how SM can spread fear about vaccines and how it can be used to help people learn more about health and trust in vaccinations.
Keywords: *COVID-19; health literacy; Social media; vaccination*

INTRODUCTION
It is widely believed that immunization is the most effective method now available for stopping the spread of COVID-19. Even though we have made consistent progress in creating the COVID-19 vaccine, vaccination reluctance has prompted concerns about public health (Luo et al., 2021). Before COVID-19 broke out, the World Health Organisation (WHO) said that not getting vaccinated was one of the ten most significant threats to global health. The WHO put it on the list because vaccine-preventable diseases are becoming more common. However, the outbreak of COVID-19 has proven that this is not the case. The reported prevalence of acceptance or behavioural intention to take the vaccine ranges from 55.2 percent to 92.5 percent. It has been established in a number of studies that vaccine aversion might compromise the success of future COVID-19 vaccination campaigns. It is crucial to figure out what makes people accept COVID-19 vaccinations, including what makes them accept them and what makes them not accept them (Han & Xu, 2022).

The rise of SM is the most important channels for gathering information and having discussions on COVID-19 (Venegas-Vera et al., 2020). Because prior study has shown that people's attitudes, beliefs, and intentions about vaccination may be influenced by digital information, it is possible that SM postings on COVID-19 vaccinations will have an effect on the public's propensity to be vaccinated (Hussain, 2020). There is a paucity of empirical research that examine such correlations in detail. People increasingly turn to SM in order to gain access to information from experts on the subject of vaccine

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safety and efficacy. It is possible that accurate information about immunization can increase their confidence and faith in vaccinations (Cinelli et al., 2020).

Vaccination-related SM exposure has been shown to be positively linked to people's positive attitudes about and usage of vaccines for influenza, HPV, and other diseases. Anti-vaccination views may be on the increase due to the widespread dissemination of misinformation regarding vaccination on SM, including conspiracy theories and exaggerated claims about vaccine adverse effects and effectiveness (Puri et al., 2020). Vaccines against human papillomavirus and measles, mumps, and rubella (MMR) are two common examples of this phenomenon. Possible unintended effects of the COVID-19 vaccination have been investigated (Tonkovi et al., 2021). International health organizations and SM giants are working together to combat and promote the use of the COVID-19 vaccination in a worldwide campaign. Many misconceptions about the effectiveness of the COVID-19 vaccine have been debunked by the World Health Organization (WHO), thus several platforms (such as Facebook) send people to WHO websites when they are seeking for information on the vaccines (Oleksy et al., 2021).

SM interactions (SMI onwards) between peers may serve as a complementary source of information and social influence in influencing people's decisions to be vaccinated against COVID-19 (Okan et al., 2020). Peer discussion occurs both online and offline and is a primary source of information and social influence (Tkáčová et al., 2021). An international survey performed in Pakistan found that 44% of respondents were influenced in their decision to be vaccinated against COVID-19 because of the opinions of their near and dear ones. People may be more willing to be vaccinated because peer communication aids in the formation of social norms (Pian et al., 2021). According to qualitative research conducted in Malaysia, connecting with friends helped to increase desire for influenza vaccination. Peer conversation that includes unfavorable sentiments against vaccinations, on the other hand, may have the opposite effect of decreasing the desire to vaccinate (Fontaine et al., 2018). When it comes to obtaining information and holding debates around COVID-19, the emergence of SM is the most crucial avenue to use (Puri et al., 2020). It is possible that the information about the COVID-19 vaccination that is shared on SM will play a crucial role in influencing the public's intention to vaccinate against the virus, in line with the findings of previous research that demonstrated that online information could influence people's views, attitudes, and vaccination intentions about vaccination (Atri et al., 2021).

In terms of empirical research, there is a scarcity of studies that look at such links in depth. It is common for consumers to utilize SM to get access to expert information about vaccination safety and efficacy, and this practice is growing increasingly popular (Cinelli et al., 2020). If people get correct knowledge regarding vaccines, it is probable that they will have more trust and faith in immunizations. People's favorable perceptions of and usage of vaccines are positively associated to how frequently they are exposed to vaccination-related content on SM, according to recent study on influenza and HPV vaccination (Oleksy et al., 2021). However, misinformation and anti-vaccination beliefs are often propagated via SM, incorporating conspiratorial beliefs, exaggerated adverse effects, and diminished vaccination effectiveness, all of which have the potential to raise vaccine hesitancy in the population at large (Hornik et al., 2021).

Cases combining HPV and MMR (measles, mumps, and rubella) immunizations are good examples of this kind of situation. COVID-19 immunization adverse consequences have been researched to see whether SM warnings should be issued. As part of a coordinated global commerce and countertrade in COVID-19 immunisation, many major international health organisations have teamed up with SM giants to conduct an attack against the virus and promote the vaccine. This is being done in an effort to counteract the spread of the virus (van Nguyen & Nguyen, 2022; Xin et al., 2021). As a result of the WHO debunking of erroneous claims concerning COVID-19 vaccinations, researchers are updating this page to reflect current knowledge and remove any outdated or inaccurate material., some platforms (for example, Facebook) direct users to WHO webpages when they are trying to find out more about COVID-19 vaccines (Pavela Banai et al., 2021). There has been no research conducted to our knowledge that has looked at the relationship between how often peers talk about COVID-19 vaccines and how likely they are to get COVID-19 vaccines.

There have lately been a number of articles looking at whether or not university students in Germany and the United States want to get the COVID-19 vaccination. COVID-19 immunization is essential for university students because of the increased risk of transmission and frequent close contact

that might occur on campus (Islam et al., 2020). It is also an excellent environment for health promotion, and it has been utilized successfully to promote HPV vaccination and flu vaccine in the past. The vaccination of university students against COVID-19 may help to prevent campus closures that might have a negative impact on learning. Aside from that, university students are heavy users of SM, with many of them are identifying SM as their major source of information search and exchange (Apuke & Omar, 2021). More study is required to ascertain the veracity of the COVID-19 vaccination information gleaned through SM and peer interactions, as well as the effect of such knowledge on college students' motivation to be vaccinated.

The purpose of this study was to investigate how often Pakistani university students intend to follow through on their plans to be vaccinated against COVID-19, as well as the variables related with these intentions, assuming that the vaccine was 85 percent effective with just a few moderate side effects (M. L. Khan et al., 2022; Teng et al., 2022). There were four factors to consider. In this study, we looked at how often people were passively exposed to COVID-19 vaccine material on SM, how often they actively interacted with it, how often they discussed it with peers, and how much information was judged to be sufficient for decision-making (Liu et al., 2022). For this reason, the four other hypotheses were all two-sided since the aforementioned connections may be either positive or negative. An additional hypothesis was tested, showing that the frequency of passive media exposure and the degree to which individuals felt they had sufficient knowledge to make an informed decision about COVID-19 vaccination were both significant predictors of vaccination intent. There was indeed confirmation of this theory.

METHODS

Study Design and Measure

The questionnaire was developed in the context of previous research and then tailored to the needs of university students at three public sector universities in the Punjab province of Pakistan. The questionnaire was administered by the researcher themselves and was closed structured. After that, a pilot test was carried out to verify the accuracy of the questionnaire and to analyse the language used in the survey. This process was directed by a linguist who has a great deal of prior knowledge in the field (Frazer & Lawley, 2000). The questionnaire was prepared in English, as was the survey questionnaire. The information was gathered between March and June of 2022. The research included university students as participants. A number of participants were omitted from the research because they were unwilling to provide their permission. The following are the stages that comprised the process of collecting data: In addition to the participants' demographic characteristics and perspectives on the influence of SM on adoption of the COVID-19 vaccine, opinions on the efficacy of the immunization were also compiled and analyzed. This was done in addition to the demographic characteristics of the participants.

The poll received responses from a total of 650 students, all of whom gave their time voluntarily. The amount of time that it took each responder, on average, to finish filling out the form was three minutes. In order to assure that it was of high quality and had high internal reliability, a self-administered questionnaire was devised, and a pilot sample was utilised to evaluate the validity of the questionnaire. Then we calculated Pearson's correlations between the variables (Crocetta et al., 2021; Hair et al., 2011). In the final stage, a route analysis was performed using normalized least square mean and variance adjusted estimates. The independent variables were affected by being exposed to SM actively participating in SM, and having discussions with peers (S. W. Khan et al., 2021). Direct effects were evaluated using 5000 bootstrapped samples at 95% CI. The pathways' standardized coefficients and significance were shown. Good model fit was defined as RMSEA 0.06, CFI >0.95 and TLI >0.95. Analysis was done using SPSS 24.0. A two-sided P less than 0.05 was judged significant.

Statistical Analysis

Data from the surveys were evaluated thoroughly, cleaned, and coded before being imported into SPSS version 24. The findings were acquired using both descriptive and inferential statistics. The impact of SM on COVID-19 vaccines was evaluated on a positive/negative scale according on whether or not questions were answered positively. For the question on positive attitudes, the replies "strongly agree" and "agree" will be deemed positive, while "neutral," "disagree," and "strongly disagree" would be viewed as negative. In order to uncover independent characteristics linked with favorable views about SM, logistic regression was used to analyze the data (Sarstedt et al., 2020). Questionnaires with a

positive attitude toward social networking sites were considered dependent variables; independent factors were gender, age, and the name of a department currently studying at the university.

RESULTS

The mean age of the 650 participants was 20.5 (standard deviation = 1.6); the majority were females (60.3 percent), and the minority were men (39.7 percent). One of the most common departments among the participants was a social science (13.6 percent), followed by science (24.4 percent), engineering (13.7 percent), and medicine/pharmacy (48.3 percent). There were 495 respondents who agreed with the statement that "vaccines are effective in preventing illnesses," while 155 said that " heard immunity give greater protection than vaccines do." The majority of respondents had favorable attitudes about vaccination. A total of 88 percent of those who took part in the survey thought that a COVID-19 vaccination would be effective in the battle against the Covid 19 pathogen.

DISCUSSION

Pakistan has had sufficient amount of COVID-19 vaccination availability now. In this study about 1/5 of the university graduates surveyed wanted to undergo COVID-19 immunization, considering the vaccination was 80% effective with just modest adverse effects. As a consequence of the government of Pakistan providing a large number of COVID-19 vaccines to students at the institution, the students have seen speedy recovery which resulted in reopening of institutions. The fact that university students are often more receptive to health care in the public interest and more open to innovative approaches than the general public means that they are more likely than the general public to be better educated about the development of the COVID-19 vaccine (Jabbour et al., 2022). In next research, it will be possible to determine whether or not persons at universities are more likely than those in the general community to consent to receiving the COVID-19 immunization.

Exposure to SMP passively, active participation in SMP, and peer discussions It is essential to take into consideration the potential significance of this variable when analyzing the moderated substantial associations between vaccination intention and knowledge of COVID-19 vaccines. Students' perceptions of COVID-19 vaccination material may improve if they are exposed to more passive/active SM and peer discussion improving their motivation to get vaccinated (Jennings et al., 2021). Previously, enough information was shown to be favorably correlated with health-related activities (including vaccination against influenza and childhood vaccination). Although more than half of the participants were medical or pharmacy students, few reported having knowledge adequate to warrant vaccination against COVID-19. It was merely an option between "slightly insufficient" and "neutral," indicating that most college students lack sufficient knowledge to decide whether or not to acquire COVID-19 immunization.

Logistic regression finds a positive and statistically significant association between non-active SM use (such as viewing a page) and the likelihood that a person will vaccinate for free or pay out of their own pocket. In addition to mediating through perceived information sufficiency, as was previously mentioned, the results of the path analysis revealed that passive exposure to SM had a statistically positive direct impact on vaccination efforts made against COVID-19. As a consequence of the results, even in the case of passive exposure (i.e., reading posted material rather than looking for or seeking counsel) may be beneficial in increasing vaccination intentions. Due to the fact that we overlooked to ask participants about their SM browsing habits and whether or not they were encouraged or discouraged from getting vaccinated, we missed out on important data (Xin et al., 2021). The development of COVID-19 vaccinations in Pakistan has received favorable coverage in the Pakistani media, including SM, and there are grounds to suspect that the messages associated with COVID-19 immunization were supportive of the disease (Steffens et al., 2020).

Users of the internet are being asked to report comments that contain rumors and misinformation to SM platforms and/or to seek fact-checking. Messages that are found to contain such rumors and misinformation will be removed from SM platforms, and the accounts of those who spread them may be suspended as well. It is possible that some "filtering" of COVID-19 vaccine-related content on SM in Pakistan has taken place, which may have resulted in the appearance of more positive statements regarding vaccination against COVID-19 with the use of online social networking sites than negative messages against COVID-19 vaccination. This may have been the case because Pakistan has a history of "filtering" content related to COVID-19 vaccines (Durach et al., 2022). As a result, the link

between vaccination intention and SM exposure is a complicated one. Because perceived information sufficiency was just a partial, rather than a complete, mediator, it is possible that additional mediators exist (for example, according to the health belief model, a higher stimulus to action is provided, but the social cognitive model suggests observational learning is provided. Such putative processes will need to be investigated more in the future (S. W. Khan & Adnan, 2022; Teng et al., 2022).

Although it was discovered that the frequency of active SM interaction (such as active search, advice seeking, comments, forwarding, and likes) is positively associated with the intention to vaccinate against COVID-19, it was discovered that the intention to vaccinate against COVID-19 is negatively associated with the frequency of active SM interaction. Despite a strong correlation between SM use and the desire to be vaccinated against COVID-19, this was not the case (e.g., active search, consultation, comments, forwarding, and likes). According to the findings of this study, the researchers found that there are certain factors that may stimulate the desire to get immunized against COVID-19.

This suggests that, in addition to the potential benefits of active SM contact, there are certain variables that may stimulate this desire. It is possible that more active searches may raise the possibility of discovering some unfavorable news concerning COVID-19 vaccinations, which may lead to an increase in the future number of people who refuse to get the vaccine. It has been stated in the past that Pakistan's SM landscape has uncovered problems with a number of different vaccinations (including the influenza vaccine and pediatric immunizations), and that as a result of the worries, people's intentions to take up relevant vaccines have decreased. As a consequence of this, active contact via SM has the potential to either increase or decrease one's likelihood of obtaining an immunization against COVID-19 (Steffens et al., 2019). Other possible suppressors of the relationship strong participation in SM and a desire to get the vaccine (e.g., more exposure to material that casts doubt on the safety of COVID-19 vaccines) should be investigated in forthcoming investigations. Since of these results, we should be cautious when utilizing public relations via the use of SM vaccination against COVID-19 because there may be inconsistent impacts from different SM exposures.

Logistic regression showed a statistically significant strong association between the frequency of communication with peers. Statistically meaningful results found in the study (e.g., friends and classmates) and the intention to vaccinate, as well as a statistically significant indirect effect on the intention to vaccinate via perceived information sufficiency. The results are consistent with prior study, which shown that peer talks might be utilized to encourage vaccination behaviors among adolescents (Zhang et al., 2021). Knowledge about the COVID-19 vaccine that students believe they have may be increased by peer talks, which can take place in either an offline or online context. Students' willingness to be vaccinated may be bolstered by the back-and-forth among them and their classmates. In the research, the direct impact of peer conversations about the desire to get COVID-19 immunization was shown to be statistically non-significant, indicating that the peer discussions had no effect. A person's perceived information sufficiency may have been the only thought that influenced the link between peer discussions and vaccination intentions. Other factors, such as subjective norms for immunization against COVID-19 and peer criticism of COVID-19 vaccinations may have also played a role in reducing the positive and negative effects of COVID-19 vaccination intentions (Durach et al., 2022).

Passive SM exposure and peer talks were positively correlated with felt knowledge sufficiency regarding COVID-19 immunisation, which may enhance intentions to get both publicly funded and privately funded COVID-19 vaccinations. The research concluded that participants' perceived knowledge sufficiency regarding COVID-19 immunisation was positively correlated with their degree of SM exposure and peer dialogues. Increased amounts of these elements may be considered in future vaccine promotion programs targeted at university students. Aside from that, the frequency of active contact on SM was shown to have a negative direct influence on the intention to be vaccinated. Conclusions from the study suggest that increased exposure to SM and peer discussions may increase knowledge and confidence about the benefits of COVID-19 vaccination, which in turn may increase the likelihood that individuals will seek out and obtain COVID-19 vaccines, whether they are provided at no cost or at their own expense.

STRENGTH AND LIMITATIONS

Strength

As the research was carried out at a time when COVID19 vaccines were readily accessible, and as a significant number of individuals had previously been immunized with the first dose of the vaccine,

participants were already familiar with COVID19 vaccines. Participants' SM profiles are analyzed in this research to see whether there is a connection between online activism and public opinion. All respondents were able to comprehend the questions since the survey was administered in both Urdu and English.

Limitations

Due to the fact that this survey was only made available online, responses from those who do not have access to the internet or SM were not included. The link to the poll was sent by e-mail, contacts, and several SM platforms. There were no advertisements for the survey in any publications or on television. As a result, the ability to contact a wide variety of individuals may be constrained. Due to the difficulties caused by the statewide lockdown and the limitations placed on public meetings at the time the poll was carried out, it was not possible to conduct the survey using offline methods such as interviews. Due to the low number of participants and the narrow margin for error, it may not be possible to generalize the findings in a way that is consistent with a higher level of confidence. This research relied on a convenient self-enrolled sample of respondents, therefore there is a possibility that the findings may not be entirely representative of the populations of Asian countries as a whole.

The sample of those who responded was skewed toward being mostly male, relatively young, well educated, and urban. We did not inquire of the participants as to whether or not they or any members of their families had been infected with COVID-19. This question was an opportunity to get more information from respondents on their experiences with the COVID-19. People already had some information about the COVID-19 vaccinations before the research was carried out, and this knowledge was used. Age was not assessed on a continuous scale; rather, it was divided into groups, each of which may be missing certain attributes. A person's attitude regarding vaccinations may be influenced by a variety of circumstances, including their usage of SM. On the other hand, elements that aren't related to SM are mostly ignored in this poll. The study was conducted between May and June of 2022, and it is possible that public sentiment has shifted since then. As a result, more research that takes into account other aspects is required in order to track the shift in public perceptions.

CONCLUSION

Though vaccinations may help stop the spread of the coronavirus, a sizable percentage of the population must be immunized for this to be effective. Vaccine scepticism, however, is an issue that undermines the endeavour to achieve high immunization coverage. The purpose of this survey research was to determine the effect of SM use on vaccination choices and opinions concerning COVID-19 vaccinations among the Pakistani population. The research did not uncover a link between SM use and whether or not individuals vaccinated themselves, but it did show a strong link between SM use and positive attitudes of the COVID-19 vaccine.

During a pandemic like the one caused by COVID-19, when physical resources are few and dependence on online information is strong, the opinions and discussions that take place in SM may have a considerable influence on people's decisions about health-related matters. Public opinion about the COVID19 vaccination may be influenced by the public's exposure to false information about the vaccine on SM. Health-related news should be presented carefully in order to successfully transmit the accurate facts about vaccinations, despite the fact that public awareness and online initiatives may break the loops of misinformation in SM by encouraging vaccine literacy. The results of this research are more applicable to collectivist societies and social norms, but that doesn't mean they can't be used in other contexts.

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