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Original Research Article

Motivation on the uptake of SARS-CoV-2 vaccines in Calabarzon region, Philippines

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ABSTRACT

Background: COVID-19 vaccination is essential for public health, aiming to limit virus transmission and severity of illness. The motivation for individuals to get vaccinated can vary and is influenced by a combination of factors. This study aimed to identify the factors that motivated Filipino residents in Cavite, Laguna, Batangas, Rizal, Quezon Province, or the Calabarzon region to get vaccinated with the SARS-CoV-2 vaccine.
Methods: A descriptive cross-sectional design was utilized in this study. Researcher-made survey questionnaires were distributed online through Google forms. Study participants were either fully or partially vaccinated with SARS-CoV-2 vaccines or have received their booster shots. Descriptive statistics were used to examine the extrinsic and intrinsic factors toward uptake of SARS-CoV-2 vaccine. The participants' overall knowledge and attitude were scored using Bloom's cut-off point.
Results: A total of 398 participants were approached from June to July 2022. Participants were 55.3% female, and the majority were 29 years and below (77.1%). Family/friends, lifestyle, government, community, and peers/associates were the extrinsic factors that motivated them to get vaccinated. As for the intrinsic factors, 86.4% showed adequate knowledge and 63.6% had positive attitude towards the SARS-CoV-2 vaccine.
Conclusions: To have a successful vaccination campaign, both extrinsic and intrinsic factors must be considered when exploring the motivation of local residents to get vaccinated for COVID-19. Family/friends were the primary extrinsic factor, followed by lifestyle, government, community, and peers/associates. Most participants showed adequate knowledge and a positive attitude toward the SARS-CoV-2 vaccines. Focusing on these factors may address vaccine hesitancy.

Keywords: COVID-19, Motivation, Philippines, SARS-CoV-2 vaccine, Vaccination

INTRODUCTION

The SARS-CoV-2 emergence in December 2019 in Wuhan, China, caused a devastating impact on numerous countries and resulted in millions of casualties.[1,2] To mitigate risk and safeguard human lives, a widespread vaccination campaign is vital for the national and global pandemic response, especially in heavily populated countries such as the Philippines.[1]

One of the primary factors to ensure the success of the vaccination campaigns is the willingness of the public to

get vaccinated which is also associated with their beliefs that vaccines are safe and effective.[1] However, difficulties in the vaccination campaigns were encountered in the Philippines due to mistrust and fear as a consequence of the Dengvaxia vaccine controversy in 2017.[3] This led to the misconceptions of vaccine safety and loss of trust in health authorities as well as the government that resulted to the low vaccination rate in the Philippines compared with other countries.[1,4,5] Hence, vaccine hesitancy has become an obstacle in the Philippines to attain herd immunity and control the spread of the virus. In 2019, the WHO considered vaccine hesitancy one of the top ten threats to global health. WHO described vaccine hesitancy as the reluctance to vaccinate despite the availability of vaccines.[5]

Although the vaccination is widely accepted to slow the curb increasing SARS-CoV-2 cases, some people refuse or delay vaccination.[4] Moreover, despite the vaccine availability and adequate efficacy of SARS-CoV-2 vaccines, six (6) out of 10 Filipino adults (61%) do not want to get vaccinated with SARS-CoV-2 vaccines showing low vaccine acceptance.6 To equate the vaccination rate among other countries, it is necessary to develop effective strategies for health promotion and vaccination campaigns to boost vaccine uptake.

This study aimed to identify the factors which motivated vaccinated people in getting SARS-CoV-2 vaccines despite vaccine hesitancy by exploring the underlying extrinsic and intrinsic factors which lead the people to get vaccinated.

METHODS

Study design

The study utilized a descriptive cross-sectional design that explored the factors that motivated vaccinated Filipinos in Calabarzon (Cavite, Laguna, Batangas, Rizal, Quezon Province) to get SARS-CoV-2 vaccines.

Setting

Calabarzon region has a total population of 16.2 million residents. It was selected as the study area because of the lowest percentage rate of vaccinated people in Luzon (71.9% versus 100% in other regions in Luzon) during the SARS-CoV-2 vaccine roll-out (POPCOM, 2020).

Participants

We recruited participants between June and July 2022 based on the following inclusion criteria: vaccinated Filipino who have either received the first dose, booster shot, or fully vaccinated with the SARS-CoV-2 vaccine, resides in Calabarzon, 18-60 years old, and provided written informed consent form. Those who refused to give written informed consent and failed to meet the criteria were excluded from this study.

Variables and measurements

Extrinsic factors were explored using 8-item factors (i.e., family, comorbidity, work, community, lifestyle, government, social media, and peers/ associates) with 3-4 statements for each item that required an answer that best applies to them. Participants can choose multiple responses. For instance, under the context of family, sample statements include 'I decided to get vaccinated to (1) motivate my family/relatives to also get vaccinated, (2) protect my family/relatives from the risk of getting the COVID-19 virus because I am living with them, and (3) not applicable. The responses for each factor were summarized and the items that showed the highest percentage determined the extrinsic factors for motivation to get vaccinated.

Modified Bloom's cut-off point was utilized to categorize the knowledge and attitude of the participants that was based on the study of Feleke et al. The level of knowledge of respondents were assessed using 10 close-ended questions that are answerable by 'true' or 'false'. Sample questions in knowledge include 1) I know the COVID-19 vaccine that was given to me. 2) Fever, headache, and body pain are some of the side effects of getting COVID-19 vaccines, 3) Getting vaccinated will protect me from harm and be beneficial for my immune system, 4) Getting vaccinated will eradicate virus transmission, and 5) COVID-19 vaccines help in mitigating severe pneumonia and diseases caused by the virus. Respondents who obtained an 80-100% score were classified to have adequate knowledge while respondents who have <80% scores are considered to have poor knowledge.

The level of attitude towards the SARS-CoV-2 vaccines were assessed using a 10-item questionnaire with a 4-point Likert scale ranging from strongly disagree (1) to strongly agree (4). Sample questions in attitude include, 1) I voluntarily got vaccinated with the COVID-19 vaccine for my immunity, 2) I was hesitant at first to get the COVID-19 vaccine since it is newly developed, 3) I am not scared of getting the COVID-19 vaccine because I have experienced getting vaccinated before, 4) Since I have been vaccinated, I have recommended to my relatives, acquaintances, and family to get vaccinated, and 5) I am confident in the effectiveness of the COVID-19 vaccine I have received. Responses were summarized and those who obtained an 80-100% score were classified to have a positive attitude while those who obtained <80% scores are considered to have a negative attitude.

Data analysis

The data were analyzed using descriptive statistics. All the data were analyzed using statistical software, Stata/MP software (StataCorp, College Station, TX, USA). The socio-demographic profile of the participants, extrinsic and intrinsic factors, were presented using mean and standard deviation (SD), and frequencies and

percentages (%). For attitudinal items, interpretation was based on weighted mean. For example, 3.25-.4.00 (strongly disagree), 2.50-3.24 (disagree), 1.75-2.49 (agree), and 1.00-1.74 (strongly agree).

RESULTS

Characteristics of participants

Table 1 shows the sociodemographic characteristics of participants. Of 440 recruited participants, 398 had successfully completed the survey questionnaire (response rate=90.4%). The majority were female (55.3%), aged 29 years old and below (77.1%), and were living with others (95.2%). Participant distribution for the five provinces were: Batangas (26.1%), Laguna (21.1%), Cavite (20.1%), Rizal (16.8%), and Quezon Province (15.8%).

Extrinsic factors that motivated participants to get vaccinated with the SARS-CoV-2 vaccine

Table 2 shows data on the extrinsic factors that motivated Filipinos to receive SARS-CoV-2 vaccines. Most of the participants selected family/relatives, lifestyle, government, community and their peers/associates as the factors that motivated most in getting SARS-CoV-2 vaccines. In family/relatives, most of the participants answered that they were motivated to get vaccinated to protect their family/relatives from the risk of getting the COVID-19 virus. For lifestyle, most of the participants decided to get vaccinated because they were aware of the health benefits they could get from immunization. While for the government factor, the majority got immunized due to their duty as a citizen of the country. Meanwhile in the community, most of the participants wanted to socialize without getting frightened of the risk of COVID-19 virus. Lastly, for the peers/associates, most of them decided to get vaccinated because they want to inspire their other friends to also get vaccinated. Furthermore, factors such as social media, comorbidity, and work were not applicable for most of the participants.

Intrinsic factor: knowledge of the participants regarding the SARS-CoV-2 vaccines

Table 3 shows the participants' knowledge regarding information about the SARS-CoV-2 vaccines. Among the 398 participants, 344 (86.4%) had adequate knowledge and 54 (13.6%) participants had poor knowledge of the SARS-CoV-2 vaccine. Most of the questions that have been answered correctly are related to the following items, such as (a) I know the COVID-19 vaccine that was given to me, (b) Fever, headache, and body pain are some of the side effects of getting COVID-19 vaccines, (c) Getting vaccinated will protect me from harm and be beneficial for my immune system, (d) COVID-19 vaccines are safe and effective even though they use different technologies, and have different effectiveness and producer, and (e) COVID-19 vaccines used different vaccine technology. While the following questions were answered mostly incorrect, such as (a) Getting vaccinated will stop virus transmission, (b) COVID-19 vaccines help in preventing severe pneumonia and respiratory diseases caused by the virus, (c) There are risks involved in getting COVID-19 vaccines, (d) COVID-19 vaccines have different effects depending on the day and distance of completing the dose, and (e) COVID-19 vaccine was rapidly developed and approved.

Table 1: Socio-demographic profile of the respondents (n=398).

Characteristics	N	%
Sex		
Male	178	(44.7)
Female	220	(55.3)
Age (years)		
29 years old and below	307	(77.1)
30 years old and above	91	(22.9)
Location		
Cavite	80	(20.1)
Laguna	84	(21.1)
Batangas	104	(26.1)
Rizal	67	(16.8)
Quezon province	63	(15.8)
Community classification		
City	199	(50.0)
Municipality	199	(50.0)
Living arrangement		
Living alone	19	(4.8)
Living with others	379	(95.2)

Table 2: Extrinsic factors motivating the respondents on getting SARS-CoV-2 vaccines[†].

Category	N	%
Family/relatives		
I decided to get vaccinated to motivate my family/relatives to also get vaccinated.	154	38.7
I decided to get vaccinated to protect my family/relatives from the risk of getting the COVID-19 virus because I am living with them.	297	74.6
Not applicable	43	10.8
Comorbidity		
I decided to get vaccinated because it is my doctor's recommendation	47	11.8
I decided to get vaccinated because I am aware that having comorbidity makes me more at risk of getting severe COVID-19 symptoms.	130	32.7
I decided to get vaccinated for the improvement of my health and to develop immunity	146	36.7
Not applicable	157	39.4
Work		
I decide to get vaccinated because the company I am working for requires us to get vaccinated	87	21.9
I decided to get vaccinated so that I can go to work	95	23.9
I decided to get vaccinated because I am a Frontliner/essential worker	75	18.9
Not applicable	202	50.8
Community		
I decided to get vaccinated because most people in our neighborhood are vaccinated	93	23.4
I decided to get vaccinated because I wanted to be a good role model for my community	136	34.2
I decided to get vaccinated because I can socialize without getting frightened	220	55.3
Not applicable	67	16.8
Lifestyle		
I decided to get vaccinated because I am aware of how convenient it is to be vaccinated when going to places	229	57.5
I decided to get vaccinated because I was aware of the health benefits I could get from immunization	234	58.8
Not applicable	26	6.5
Government		
I decided to get vaccinated because of the incentives I might get	60	15.1
I decided to get vaccinated because it is my duty as a citizen of this country	227	57.0
I decided to get vaccinated because of the strict restrictions imposed by the government	211	53.0
Not applicable	28	7.0
Social media		
I decided to get vaccinated after seeing posts regarding vaccines on my social media accounts	98	24.6
I decided to get vaccinated because most of my friends online are getting vaccinated too	61	15.3
I decided to get vaccinated so that I can also motivate my friends online after posting about my vaccinated selfie	144	36.2
Not applicable	156	39.2
Peers/associates		
I decided to get vaccinated because I was heavily convinced by my peers	91	22.9
I decided to get vaccinated because I want to relate with my vaccinated friends	38	9.5
I decided to get vaccinated because I want to inspire my other friends to get vaccinated too	184	46.2
Not applicable	128	32.2

[†]Participants can choose multiple responses.

Table 3: Knowledge of the respondents on SARS-CoV-2 vaccines (n=398).

Statements	N	%
	Correct	
1. I know the COVID-19 vaccine that was given to me	389	(97.7)
2. Fever, headache, and body pain are some of the side effects of getting COVID-19 vaccines	380	(95.5)
3. Getting vaccinated will protect me from harm and be beneficial for my immune system	389	(97.7)
4. Getting vaccinated will stop virus transmission	332	(83.4)
5. COVID-19 vaccines help in preventing severe pneumonia and respiratory diseases caused by the virus	334	(83.9)
6. There are risks involved in getting COVID-19 vaccines	346	(86.9)
7. COVID-19 vaccines are safe and effective even though they use different technologies, and have different effectiveness and producer	375	(94.2)
8. COVID-19 vaccines have different effects depending on the day and distance of completing the dose	344	(86.4)
9. COVID-19 vaccines used different vaccine technology	373	(93.7)
10. COVID-19 vaccine was rapidly developed and approved	336	(84.4)

Table 4: Attitude of the respondents towards SARS-CoV-2 vaccines (n=398).

Statements	Mean (SD)	Interpretation
1. I voluntarily got vaccinated with the COVID-19 vaccine for my immunity	3.68 (0.51)	Strongly agree
2. I was hesitant at first to get the COVID-19 vaccine since it is newly developed	3.16 (0.84)	Agree
3. I am not scared of getting the COVID-19 vaccine because I have experienced getting vaccinated before	3.13 (0.82)	Agree
4. Since I have been vaccinated, I have recommended to my relatives, acquaintances, and family to get vaccinated	3.53 (0.64)	Strongly agree
5. I am confident in the effectiveness of the COVID-19 vaccine I have received	3.52 (0.66)	Strongly agree
6. I am satisfied after getting vaccinated because the vaccine that I received is the one I prefer	3.46 (0.74)	Strongly agree
7. I voluntarily got vaccinated with the COVID-19 vaccine for the sake of my family	3.61 (0.60)	Strongly agree
8. I am convinced that it is necessary to take a COVID-19 shot and to prioritize vaccination in the Philippines	3.64 (0.58)	Strongly agree
9. I am confident that the COVID-19 vaccines created by different countries are safe and effective	3.48 (0.66)	Strongly agree
10. I got vaccinated right away when my vaccine preference became available	3.18 (0.82)	Agree

1.00–1.74 Strongly agree; 1.75–2.49 Agree; 2.50-3.24 Disagree; 3.25 - 4.00 Strongly disagree; SD=Standard deviation.

Intrinsic factor: attitude of the participants regarding the SARS-CoV-2 vaccines

Table 4 shows the attitude of the participants in Calabarzon with regards to SARS-CoV-2 vaccine. Most of the participants (63.6 %) had a positive attitude toward the SARS-CoV-2 vaccine. They have 'strongly agreed' on the statements, such as (a) they voluntarily got vaccinated with the SARS-CoV-2 vaccine for their immunity, (b) they have recommended to their loved ones to get vaccinated, and (c) they are confident in the effectiveness of the vaccine, (d) they are satisfied with the preferred vaccine inoculated to them, (e) they voluntarily got vaccinated for their family, (f) they are convinced that it is necessary to get vaccinated and prioritize SARS-CoV-2 vaccination, (g) they are confident that the vaccine from the different countries are safe and effective. On the other hand, they only 'agreed' to the statements, such as (a) they were hesitant to get vaccinated with the SARS-CoV-2 vaccine since it was newly-developed, (b) they were not scared of getting the vaccine since they were vaccinated with different vaccine before and lastly, (c) they got vaccinated right away when their vaccine preference became available.

DISCUSSION

Extrinsic factors that motivated participants to get vaccinated with the SARS-CoV-2 vaccine

This is the first study in the Philippines to explore the factors that motivated people to get vaccinated with the

SARS-CoV-2 vaccines. Factors that influenced them to get vaccinated include their family/relatives, lifestyle, government, community, and peers/associates.

Participants reported that their main motivation to get vaccinated with the SARS-CoV-2 vaccine was to prioritize the safety of their family/relatives and to protect them from the threat of the COVID-19 virus because they are living with them. This finding is in line with the studies conducted in the United States, Ethiopia and Bangladesh.[7,8,9] Specifically in Bangladesh, participants have decided to get vaccinated with SARS-CoV-2 vaccine because they tend to have an intimate contact with their loved ones and family and to avoid social distancing themselves to them.[8]

Other participants reported that lifestyle was a motivation factor to get vaccinated since they are aware of the health benefits they can acquire from this vaccination, such as developing immunity to protect themselves. According to the Centers for Disease Control and Prevention, COVID-19 vaccination helps in building an immune response without the potentially severe illness or symptoms associated with the COVID-19 infections.[10] Meanwhile, a study from Bangladesh reported that after getting vaccinated with COVID-19 the participants have improved eating habits, enhanced sleeping quality, decreased stress and boosts their immune system.[8]

Furthermore, participants reported that the government has influenced them to get vaccinated as the majority claimed that as a living citizen of the country, it is their duty to be vaccinated. This shows that the participants are motivated by a sense of moral and have performed their duties as a citizen of the country. Previous studies have shown that trust towards the government and expert individuals that emphasized the intention of the COVID-19 vaccination and its importance to the country has highly affected the people's intention to be vaccinated.[11,12] Similarly, a study from Belgium reported that the government played a crucial role in increasing the COVID-19 vaccination by having transparent communication and scientific evidence regarding vaccine safety and its benefits to the people.[11]

Participants also reported that it is their desire to protect the well-being of the wider community from the threat of the COVID-19 virus as well as to inspire and assure their peers/associates that getting vaccinated with the SARS-CoV-2 vaccine is highly beneficial not just for themselves but the entirety of the people. Previous studies shown that people can be motivated to get vaccinated as long as it is proven safe in their community and their desire to protect their community members.[8] Meanwhile, several studies reported that peers/associates are an influential motivator in getting vaccinated as they are considered as one reliable source of information that can affect the motivation of their friends, peers/associates towards the SARS-CoV-2 vaccination.[9,13]

Intrinsic factors: knowledge and attitude of the participants regarding the SARS-CoV-2 vaccines

Participants showed adequate knowledge about the SARS-CoV-2 vaccine that was inoculated to them such as the benefits of vaccine to the body that it can boost the immune system, the possible side effects of the vaccine such as headache, fever and body pain and the vaccine technology incorporated into the vaccine. This finding corroborated with a cross-sectional study conducted in Ethiopia that showed that participants had a thorough understanding of the COVID-19 vaccine which was the reason for their intention to get vaccinated as soon as the vaccine was made available.[14] On the other hand, previous cross-sectional study conducted in Oman reported that the participants had poor knowledge about the COVID-19 vaccine which resulted to lower vaccination rate.[15,16] The difference in these studies might be due to the timeline of the study since the latter were conducted earlier so the respondents have insufficient knowledge regarding the COVID-19 vaccines. Furthermore, a study conducted in Saudi Arabia revealed that participants were aware that COVID-19 vaccine symptoms are similar to seasonal flu such as headache, cough, body pain and fever.[17] In addition, although COVID-19 vaccines use different types of technologies and have different efficacy rates and production, respondent from Saudi Arabia reported that they have sufficient knowledge of the safety and effectiveness of the COVID-19 vaccine as well as the different platform technology that was incorporated into the vaccines.[17,18]

Vaccine hesitancy was notable in this study due to its characteristic of being a newly developed vaccine. The participants were hesitant at first before getting the vaccine since it was recently introduced to everyone. According to a study in India among undergraduate medical students, vaccine hesitancy was only found among some of them.[19] The majority of those who have taken the vaccine without hesitation felt that it was important to be vaccinated to get their personal life back on track and also to prioritize their health and their future patients.[14,19] Though this study can be biased because undergraduate medical students are knowledgeable about vaccine necessity.

Regardless, participants reported that the majority have a positive attitude with regard to receiving COVID-19 vaccines. Despite being hesitant in the beginning, participants have expressed their courage in getting the COVID-19 vaccine after experiencing the efficacy of their vaccines before. A study from Italian City in Messina about vaccine hesitancy among parents showed that an unfavorable opinion seemed conditioned by both direct and indirect knowledge of people, mostly parents, harmed by vaccines resulting in vaccine hesitancy which affected their stand in receiving COVID-19 vaccine.[20]

Furthermore, participants had their preferred COVID-19 vaccine brand and when they became available, they

immediately got vaccinated thus making them more satisfied. Previous studies reported that being selective on COVID-19 vaccine brand contributed to the vaccine refusal which resulted in lower vaccination rate.[21,22] A conjoint analysis conducted in the Philippines stated that the highest attribute that a consumer considers to get vaccinated is the brand, specifically Pfizer and Moderna.[23,24] In addition, participants understand the necessity of COVID-19 shot and significance of vaccination in the Philippines which is to protect each individual and the public from the threat of the COVID-19 virus. As supported by the previous study conducted in France and the US, they reported that consumers prioritize their safety when it comes to vaccination.[25,26]

Strengths and limitations

This study has several limitations. First, the study was a descriptive cross-sectional study. We did not examine the association between the extrinsic and intrinsic factors and their motivation, as there is no available validated scale that measures motivation as an outcome. Second, the findings in this study cannot be generalized to the whole population in the Philippines and are limited only to the CALABARZON Region. Third, online questionnaires were used which led to missing data or unanswered questions and the questionnaire was only limited to those who have access to the internet. This may have resulted in nonresponse bias. Despite this limitation, a favorable response rate was obtained (90.4%).

CONCLUSION

The most important extrinsic factors that motivated the participants in Calabarzon were their family/relatives, lifestyle, government, community, and peers/associates. As for their intrinsic factors, the respondents have adequate knowledge and a positive attitude toward the SARS-CoV-2 vaccines. Exploring different factors that motivate people to get vaccinated with the SARS-CoV-2 vaccine is vital so that strategies and interventions can be pursued to improve and strengthen the vaccination campaign. Identifying the underlying extrinsic and intrinsic factors that influenced the participants to get vaccinated will provide evidence-based data which are beneficial to future researchers, health care professionals, and even the government to be utilized as a valuable resource that may help address potential disparities in vaccine hesitancy.

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