

COVID-19 Vaccine Preference, Hesitancy, and Conspiracy Beliefs of Radiologic Technologists in Batangas Province, Philippines

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Eloisa G. Magsino¹, Mica Janine D. Arellano², James Randell J. Bagunas³, Jamaica S. Garcia⁴, Mike Laurence M. Landicho⁵, Joyce P. Mueca⁶, Oliver Shane R. Dumaol⁷
Radiologic Technology Department, College of Allied Medical Professions
Lyceum of the Philippines University, Batangas City
loismgsn@gmail.com¹, mjdaarellano30@gmail.com², bagunasjames75@gmail.com³,
jamaicagarcia142@gmail.com⁴, mllandicho9@gmail.com⁵, msjoycemueca@gmail.com⁶,
olivershane.dumaol@gmail.com⁷

Abstract – Vaccine hesitancy and vaccine conspiracy beliefs are factors that decreased the intention of getting the vaccine. Therefore, the progress of betterment and achieving herd immunity will be delayed if these factors were presented high. To date, no research study assessed the level of vaccine hesitancy and vaccine conspiracy beliefs of radiologic technologists, who are part of the healthcare team. In addition, the ranking of the vaccines based on familiarity and the preferred vaccine were also determined. The correlation between the socio-demographic profile and the other variables such as vaccine preference, vaccine hesitancy, and conspiracy beliefs were also evaluated. A cross-sectional study with a convenience sample of 68 respondents were surveyed online. The four-part questionnaire was hosted by Google forms and the link was distributed through social media platforms. Eligibility criteria included being a registered radiologic technologist and being employed within the province of Batangas, Philippines during the time of the study. The measures included socio-demographic profile, ranking the vaccines and preference, Oxford COVID-19 vaccine hesitancy scale, and Vaccine Conspiracy Belief Scale (VCBS). The obtained results from 61 responses show that respondents were most familiar to AstraZeneca COVID-19 vaccine. However, 49.2% of the respondents preferred the Pfizer/BioNTech vaccine. The level of vaccine hesitancy and vaccine conspiracy beliefs of the respondents were low. Therefore, the level of vaccine acceptance among radiologic technologists was high. There was no significant relationship between socio-demographic profile and vaccine preference, hesitancy, and conspiracy beliefs of respondents.

Keywords – Healthcare, immunity, radiographer, SARS-COV2, vaccine acceptance

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) has rapidly escalated into a serious public health pandemic, affecting 86.4 million people worldwide and leading to 1.9 million deaths by January 2021 [1]. Radiologic technologists are healthcare workers who are on the same position as and combating with doctors and nurses during the pandemic, and could be infected with the virus [2], [3]. To control the transmission of COVID-19, widespread vaccination will be required [4]. Among the high-risk categories considered to be candidates for early vaccination, health care professionals were given priority [1]. The issues regarding on not obtaining the vaccine involve concerns in connection with the novelty, safety, and possible side effects of the vaccine [4].

Uptake will determine the success of a safe and effective COVID-19 vaccine; if some people are unwilling or unable to be immunized, uptake will be limited [5]. Beliefs in vaccine conspiracy theories are also likely to affect vaccine intentions [6]. These factors may hinder the progress of betterment and achieving herd immunity.

Recognizing the vaccine hesitancy characteristics of a particular population can be a key component of an effective vaccination plan [7]. Conspiracy beliefs can lead to vaccine hesitancy by instilling distrust in governments, healthcare practitioners, and the pharmaceutical sector [8]. However, few studies assessed the vaccine hesitancy and conspiracy beliefs of healthcare workers, particularly radiologic technologists.

OBJECTIVES OF THE STUDY

This study aimed to assess the correlation between the socio-demographic profile and the other variables. COVID-19 vaccines ranking based on familiarity, the preferred vaccine, and the level of vaccine hesitancy and conspiracy beliefs of the radiologic technologists employed in Batangas Province at the time of the study were also evaluated.

METHODS

Research design

A cross-sectional web-based survey was conducted using a set of questionnaires. The survey was hosted by Google forms and the link was posted and shared through social media platforms (e.g., Facebook, Instagram, and Messenger).

Participants of the Study

A convenience sample of 68 respondents were gathered based on their availability and willingness to complete the questionnaire. The sample size was obtained through computation using GPower with effect size of 0.3 and maximum allowable error of 0.10. Eligibility criteria for respondents in the study included being a registered radiologic technologist working within the province of Batangas, Philippines at the time of the survey. The respondents who are not qualified were excluded.

Data Gathering Instruments

The survey questionnaire consisted of four parts assessed the socio-demographic profile, the ranking and preferred vaccine, vaccine hesitancy, and the vaccine conspiracy beliefs of the respondents. Personal details such as gender, age, marital status, assigned field, employment sector, and employment status were collected on the first part.

Previous studies did not present a set of questionnaires to determine the rank and the preferred vaccine. Therefore, we originated a pair of question to investigate it. The reliability of the questionnaire was evaluated using face validation. The first question determined the ranking of COVID-19 vaccines depending on level of familiarity of the respondents. The responses were coded using an eight-point system. Lower number indicated higher level of familiarity. The second question concluded the preferred vaccine of the

respondents. The same list of vaccines was utilized on both questions.

The Oxford COVID-19 vaccine hesitancy scale was a seven-item questionnaire. The options were coded from 1-5. The option 'don't know' was included but did not have an equivalent score. A high number of score determined high level of vaccine hesitancy [5].

A seven-item questionnaire of Vaccine Conspiracy Beliefs Scale (VCBS) assessed the vaccine conspiracy beliefs of the respondents. The vaccine conspiracy statements were graded using a seven-point Likert scale (1-strongly disagree;7-strongly agree). Higher score specified high level of vaccine conspiracy belief [5].

Ethical Approval and Data Privacy Review

The study was mandated by the Research Ethics and Review Committee (RERC) of the Lyceum of the Philippines University-Batangas (Study Approval No. A1-2021-003). The participation in the study was voluntary. Informed consent was indicated prior to the completion of the survey. The respondents were assured that all personal details would be limited to the research team.

The survey questionnaire was evaluated by the Data Privacy Office of the Lyceum of the Philippines University-Batangas in relation to data privacy and protection.

Statistical Analysis

One-way Analysis of Variance (ANOVA) was performed to determine the relations of mean vaccine preference, hesitancy, and conspiracy beliefs with the socio-demographic profile. Descriptive statistics such as frequency and percentage were used to summarize the data collected. Data were analyzed using Microsoft Excel 2019 and IBM SPSS Statistics Subscription Build 1.0.0.1447 for Windows.

RESULTS AND DISCUSSION

Of all the questionnaires distributed, 63 returned with responses. Two of the responses were excluded because they did not meet the criteria of being a respondent (1 x-ray technician, 1 unregistered radiologic technologist). The frequency distribution of the socio-demographic profile of the respondents were presented in Table 1. The final sample comprised 28 male (45.9%) and

33 female (54.1%) registered radiologic technologists. Most of the respondents were in the age group of 20-25 years old (42.6%), followed by 26-30 (37.7%), 31-35 (9.8%), and 36-40 (4.9%). Age group 41-45, 46-50, and 51-55 each have one (1.6%) respondent. No respondent belongs to the age group of 56-60 years old.

Table 1. Socio-demographic profile

Socio Demographic Item	n	%
Gender		
Male	28	45.9
Female	33	54.1
Age		
20-25	26	42.6
26-30	23	37.7
31-35	6	9.8
36-40	3	4.9
41-45	1	1.6
46-50	1	1.6
51-55	1	1.6
56-60	-	-
Marital Status		
Single	45	73.8
Married	16	26.2
Cohabiting	-	-
Separated	-	-
Widowed	-	-
Assigned Field		
Computed Tomography	19	31.1
Magnetic Resonance Imaging	7	11.5
Nuclear Medicine	-	-
Ultrasound	13	21.3
X-ray	16	26.2
Radiation Therapy	1	1.6
Interventional Radiology	-	-
Other	5	8.2
Employment Sector		
Private Hospital	44	72.1
Government Hospital	15	24.6
Free-standing Clinic	2	3.3
Employment Status		
Full-time	60	98.4
Part-time	1	1.6

Majority of the respondents were single (73.8%) and the remaining were married (26.2%). No respondents were cohabiting, separated, or widowed. The respondents were assigned to computed tomography (31.1%), magnetic resonance imaging (11.5%), ultrasound (21.3%), x-ray (26.2%), and radiation therapy (1.6%). None of the respondent was solely assigned to nuclear

medicine and interventional radiology. Five (8.3%) respondents answered the 'other' option and stated their multiple fields. Forty-four (72.1%) respondents were employed in private hospital, fifteen (24.6%) were in government hospital, and 2 (3.3%) in free-standing clinic. Majority of the respondents were working full-time (98.4%) and only one of them was a part-timer (1.6%).

The employment of male workers was more affected than female workers during a catastrophe. Most of the respondents belong to the younger age group. The reason may be that the data collection occurred in social media platforms. Due to young age, most of them are still single. Majority of the respondents were employed in computed tomography (CT), which is a vital in diagnosing and treating COVID-19 patients. Working in a private hospital may have a higher work satisfaction than working in a public or government hospital. Also, people chose to work in full-time hours during this pandemic.

Male employment was typically affected more significantly than female employment in downturns preceding the present crisis [9]. Similar to study of Wirawan et al. [10], due to their data collection technique that depended on social media, the age distribution of their study resulted to young individuals aged 20 to 26 years old. A study of Pontone et al. [11] stated that CT scan provides crucial information regarding the diagnosis and prognosis of patients who contracted COVID-19. In comparison to the private sector, public hospitals have a lower degree of job satisfaction [12]. Cowan [13] claimed that in this pandemic, there are individuals who go from not working to working full-time hours.

The ranking of COVID-19 vaccines based on the level of the familiarity of the respondents were presented in the Figure 1. The first vaccine in the rank was the AstraZeneca, developed by Oxford University, which scored 383. With one point difference, Pfizer/BioNTech vaccine of Pfizer and BioNTech followed the rank. Subsequently, Sinovac of Sinovac Biotech with a score of 333, Moderna developed by Moderna with a score of 331, Johnson & Johnson created by Janssen Vaccines and Janssen Pharmaceuticals with a score of 240. The last three vaccines in the ranking were the Sputnik V developed by Gamaleya Research Institute of Epidemiology and Microbiology with a score of 195, Novavax vaccine of Novavax and

Coalition for Epidemic Preparedness Innovations (CEPI) with a score of 173, and the Sinopharm COVID-19 vaccine created by Sinopharm’s Wuhan Institute of Biological Products which scored 159.

The AstraZeneca and Pfizer/BioNTech COVID-19 vaccines dominated the ranking. The reason can be the latest update that both vaccines are effective against the B.1.617.2 or the Delta variant of the COVID-19. One of the primary vaccines developed is the Sinovac vaccine, which presented a good outcome.

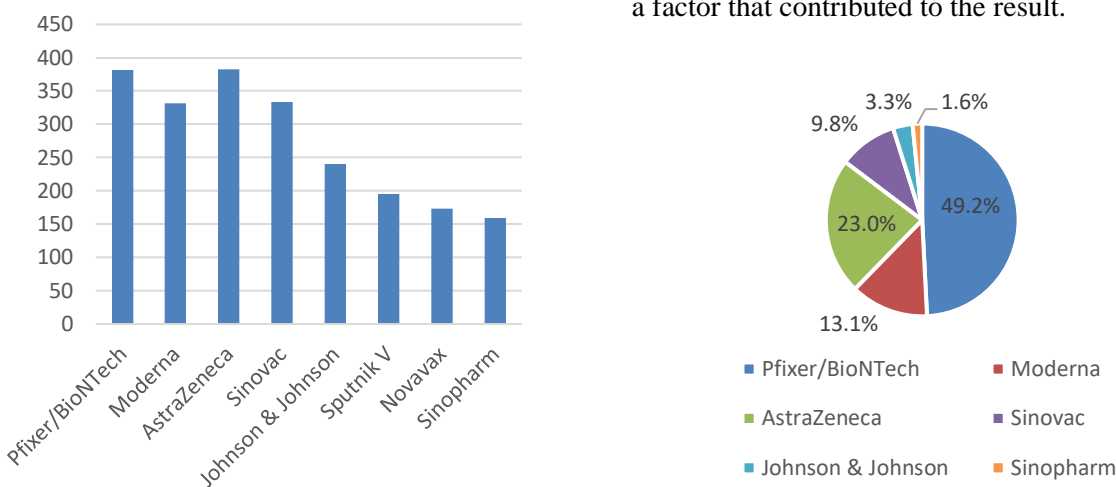


Fig. 1. Ranking of vaccines based on familiarity

According to a study of Bernal et al. [14] the AstraZeneca and Pfizer/BioNTech vaccines demonstrated significant levels of efficacy after two doses against the Delta variant of COVID-19. A study of Dheeman [15] mentioned that Sinovac was one of the pioneer vaccines that was developed to combat the COVID-19. Iyal et al. [16] also stated that it offers a wide assortment of protective immunity.

The preferred vaccine of the respondents was demonstrated in Figure 2. The Pfizer/BioNTech (49.2%) was the most preferred COVID-19 vaccine of radiologic technologists in Batangas Province. Of the 61 respondents, 8 (13.1%) preferred Moderna, 14 (23%) selected AstraZeneca, 6 (9.8%) chose Sinovac, 2 (3.3%) preferred Johnson & Johnson, and 1 (1.6%) for Sinopharm. No respondent selected Sputnik V and Novavax as their preferred vaccine.

Having a high effectiveness rate and being published as a safe vaccine are crucial factors to consider when selecting the preferred vaccine. The

Pfizer/BioNTech vaccine is the most preferred vaccine of the respondents. It is mainly because of the reported high efficacy of the vaccine. The AstraZeneca vaccine was reported safe and provides few adverse reactions, which may be the reason it belongs to the top three preferred vaccines of the respondents. Similar to Pfizer/BioNTech vaccine, a high effectiveness rate was also reported for the Moderna vaccine. The least preferred vaccines are Sinopharm, Sputnik V, and Novavax. The reported adverse reactions of the vaccine can be a factor that contributed to the result.

The safeness and effectiveness of a vaccine has an impact to vaccine confidence [17]. According to Meo et al. [18] the Pfizer/BioNTech vaccine has an efficacy rate of 95%. Badiani et al. [19] also stated that Pfizer and BioNTech's vaccine gave the world an optimistic possibility. A study by Shekhar et al. [20] stated that due to decreased reactogenicity profile of the AstraZeneca vaccine, it was found to be safe and well tolerated. Meo et al. [18] also stated that the Moderna vaccine has an effectiveness of 94.5%. However, people raise concerns about the vaccine, including the possible complications [21]. A study by Sharma et al. [22] mentioned that in the Phase 3 of clinical trials of Sinopharm vaccine, disadvantages were reported including vaccine-enhanced illness and weakened immunological response. In the study of Kaur et al. [23] the Sputnik V vaccine presented various adverse reactions such as injection site pain, hyperthermia, asthenia, headache, and joint and muscle pain. He also stated the adverse reaction of the Novavax vaccine which are severe systemic reaction including joint pain and fatigue.

Table 2. Oxford COVID-19 Vaccine Hesitancy Scale

Item	Response	n	%
Would you take a COVID-19 vaccine if offered?	Definitely	49	80.3
	Probably	8	13.1
	I may or may not	4	6.6
	Probably not	-	-
	Definitely not	-	-
If there is a COVID-19 vaccine available:	Don't know	-	-
	I will want to get it as soon as possible	33	54.1
	I will take it when offered	26	42.6
	I'm not sure what I will do	-	-
	I will put it off (delay) getting it	1	1.6
	I will refuse to get it	-	-
I would describe my attitude towards receiving a COVID-19 vaccine as:	Don't know	1	1.6
	Very keen	14	23
	Pretty positive	28	45.9
	Neutral	19	31.1
	Quite uneasy	-	-
If a COVID-19 vaccine was available at my local pharmacy, I would:	Against it	-	-
	Don't know	-	-
	Get it as soon as possible	41	67.2
	Get it when I have time	-	-
	Delay getting it	15	24.6
If my family or friends were thinking of getting a COVID-19 vaccination, I would:	Avoid getting it for as long as possible	2	3.3
	Never get it	1	1.6
	Don't know	-	-
	Strongly encourage them	2	3.3
	Encourage them	28	45.9
I would describe myself as:	Not say anything to them about it	32	52.5
	Ask them to delay getting the vaccination	-	-
	Suggest that they do not get the vaccination	-	-
	Don't know	-	-
	Eager to get a COVID-19 vaccine	-	-
Taking a COVID-19 vaccination is:	Willing to get a COVID-19 vaccine	16	26.2
	Not bothered about getting the COVID-19 vaccine	43	70.5
	Unwilling to get the COVID-19 vaccine	1	1.6
	Anti-vaccination for COVID-19	1	1.6
	Don't know	-	-
Taking a COVID-19 vaccination is:	Really important	36	59
	Important	23	37.7
	Neither important nor unimportant	2	3.3
	Unimportant	-	-
	Really unimportant	-	-
	Don't know	-	-

The Oxford COVID-19 Vaccine Hesitancy items were presented in Table 2. In a total of 61 respondents, 49 (80.3%) of them declared they would definitely take a COVID-19 vaccine if offered, 8 (13.1%) would probably take a COVID-19 vaccine, 4 (6.6%) may or may take a COVID-

19 vaccine. No respondent selected probably not, definitely not and don't know. In terms of the COVID-19 vaccine being available, 33 (54.1%) will want to get it as soon as possible, 26 (42.6%) will take it when offered, 1 (1.6%) was not sure what will do, 1 (1.6%) will refuse to get it. None of them will put off (delay) getting it and don't know. Fourteen (23%) respondents described their attitude as very keen towards receiving a COVID-19 vaccine, 28 (45.9%) were positive, 19 (35.1%) were neutral. No respondent was quite uneasy, against and they don't know. If a COVID-19 vaccine was available at the local pharmacy, 41 (67.2%) of the respondents would get it as soon as possible, 15 (24.6%) would get it when have time, 2 (3.3%) would delay getting it, 1 (1.6%) would avoid getting it for as long as possible, 2 (3.3%) of them don't know. None of them responded they would never get it. Twenty-eight (45.9%) respondents answered that if their family or friends were thinking of getting a COVID-19 vaccination, they would strongly encourage them, 32 (52.5%) would encourage them, and 1 (1.6%) selected don't know. None of the respondent answered they would not say anything about it, ask them to delay getting the vaccination and suggests that they do not get the vaccination. Sixteen (26.2%) of the respondents describe themselves as eager to get a COVID-19 vaccine, 43 (70.5%) were willing, 1 (1.6%) would not bother, 1 (1.6%) was unwilling. No respondent was for anti-vaccination of COVID-19 and don't know. With regards to taking the COVID-19 vaccination, 36 (59%) of the respondents said that it is important, 23 (37.7%) of them said that it is important, 2 (3.3%) of them said that it is neither important or nor unimportant. No respondent answered that it is unimportant, unimportant and they don't know.

Majority of the respondents were positive towards COVID-19 vaccination. Since they belong to the healthcare team, they have sufficient knowledge on how important the vaccine in controlling the transmission of virus. Their exposure to COVID-19 patients, susceptibility to the virus, and perceived risk determined their willingness to be vaccinated as soon as possible. Therefore, it resulted to low level of vaccine hesitancy and a high level of vaccine acceptance of the respondents. The recognized result presume that vaccine will help in saving more lives and can result to immunity of the community.

Vaccine hesitancy refers to a reluctance in accepting or refusing vaccinations despite vaccination services being accessible [24]. Kwok et al. [25] stated that it continues to exist as a global concern. Wang et al. [26] also stated that the World Health Organization (WHO) included the vaccine hesitancy to the top ten global health threats. A study by Shekhar et al. [1] stated that acceptance of COVID-19 vaccination among the general public and healthcare workers emerge to have a significant role in the successful control of the pandemic. Chew et al. [27] claimed that more than 95% of health worker in Asia are eager to receive the vaccine. He added that the one of the key drivers of vaccination intention is the perceived susceptibility. Lin et al. [28] stated that perceived susceptibility refers to people's perceptions of their vulnerability to infection. Bell et al. [29] added that the perception towards the risk of having the disease influenced the vaccine acceptance. Succi [30] claimed that getting the chance to experience infectious diseases, its implications and sequelae can influence professional's attitude and willingness. Similarly, Karlsson et al. [31] also noted that most of the respondents who evaluated that their risk perception is high, will receive the vaccine against the COVID-19. Freeman et al. [5] claimed that vaccine acceptance is higher due to beliefs that vaccination will save lives and will benefit the community thus it will be harmful if many individuals do not get vaccinated.

Regarding vaccine conspiracy beliefs statements, it was measured in a 7-point Likert scale and was summarized in Table 3. Out of 61 respondents, 21 (34.4%) disagreed in terms of fabrication of vaccine safety data, (26.2%) were neutral, 9 (14.8%) strongly agreed, 7 (11.5%) somewhat disagreed and 6 (9.8%) somewhat agreed. No respondent strongly agreed in fabrication of vaccine safety data. Majority of the respondents disagreed (31.2%) in the matter of covering the fact that immunizing children is harmful. Fourteen (23%) of the respondents were neutral, 13 (21.3%) somewhat disagreed, 10 (16.4%) strongly disagreed, 3 (4.9%) somewhat agreed, and 2 (3.3%) agreed. No respondent strongly agreed. Regarding the statement that pharmaceutical companies cover up the dangers of vaccine, 17 (27.9%) respondents disagreed, 14 (23%) answered neutral, 9 (14.8%) somewhat disagreed, 8 (13.1%) respondents somewhat agreed

and strongly disagreed, 3 (4.9%) agreed and 2 (3.3%) respondents strongly agreed. In terms of people deceiving effectiveness of vaccine, most of the respondents were neutral (26.2%) 13 (21.3%) disagreed, 12 (19.7%) somewhat agreed, 8 (13.1%) somewhat disagreed, 6 (9.8%) strongly disagreed, 5 (8.2%) agreed and 1 (1.6%) strongly agreed. With regards to fabrication of vaccine effectiveness data, 18 (29.5%) respondents disagreed, 16 (26.2%) were neutral, 10 (16.4%) strongly disagreed, 8 (13.1%) somewhat disagreed, 6 (9.8%) somewhat agreed, 2 (3.3%) agreed and 1 (1.6%) strongly agreed. In terms of people being deceived about the vaccine safety, most of the respondents were neutral (24.6%), 14 (23%) disagreed, 9 (14.8%) somewhat disagreed, 8 (13.1%) somewhat agreed, 7 (11.5%) strongly disagreed, 6 (9.8%) agreed, and 2 (3.3%) strongly agreed. Most of the respondents were neutral (32.8%) in the matter of government covering the link between vaccines and autism, 17 (27.9%) disagreed, 9 (14.8%) strongly disagreed, 9 (14.8%) somewhat disagreed, 4 (6.6%) somewhat agreed and 2 (3.3%) agreed.

People have different perception about vaccine. It is affected by various factors including vaccine data, the manufacturers who developed it, and the advice of some healthcare workers. It can have a positive and negative effect towards the intention of being vaccinated. Majority of the respondents expressed their objection to the vaccine conspiracy statements. All respondents in the study were professionals and have completed their education. A high level of educational attainment has a big impact on how people comprehend the idea of vaccine. The respondents demonstrated a low level of vaccine conspiracy beliefs.

Conspiracy theories are attempts to explain happenings in the world that are disturbing or contradictory to one's personal expectations [32], [33]. The conspiracy beliefs were linked with irrational vaccination fears and a refusal to vaccinate [34]. A study conducted by Shapiro et al. [6] claimed that knowledge about vaccine, health care provider's advice, vaccine conspiracy beliefs has a big impact to influence vaccine intentions. Tomljenovic et al. [35] claimed that higher levels of education were linked to less vaccine conspiracy ideas. He also added that the contribution of higher education in decreasing conspiracy theories is due to the outcome of complex interplay of numerous psychological elements linked to education.

Table 3. Vaccine Conspiracy Belief Scale (VCBS)

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
Vaccine safety data are often fabricated (made up).	9 (14.8%)	21 (34.4%)	7 (11.5%)	16 (26.2%)	6 (9.8%)	2 (3.3%)	-
Immunizing children is harmful, and this fact is covered up.	10 (16.4%)	19 (31.2%)	13 (21.3%)	14 (23%)	3 (4.9%)	2 (3.3%)	-
Pharmaceutical companies cover up the dangers of vaccines.	8 (13.1%)	17 (27.9%)	9 (14.8%)	14 (23%)	8 (13.1%)	3 (4.9%)	2 (3.3%)
People are deceived about the effectiveness of vaccines.	6 (9.8%)	13 (21.3%)	8 (13.1%)	16 (26.2%)	12 (19.7%)	5 (8.2%)	1 (1.6%)
Vaccine effectiveness data are often fabricated (made up).	10 (16.4%)	18 (29.5%)	8 (13.1%)	16 (26.2%)	6 (9.8%)	2 (3.3%)	1 (1.6%)
People are deceived about vaccine safety.	7 (11.5%)	14 (23%)	9 (14.8%)	15 (24.6%)	8 (13.1%)	6 (9.8%)	2 (3.3%)
The government is trying to cover up the link between vaccines and autism.	9 (14.8%)	17 (27.9%)	9 (14.8%)	20 (32.8%)	4 (6.6%)	2 (3.3%)	-

The Table 4 presents the result of correlation of socio-demographic profile with vaccine preference, hesitancy, and conspiracy beliefs. The p -value <0.05 was considered significant. Therefore, all variables having $p>0.05$ has no significant relationship. The ranking of vaccines was not included in the evaluation of correlation due to similar mean for each respondent. The vaccine preference of respondents was not associated with gender ($p = 0.184$), age ($p = 0.415$), marital status ($p = 0.728$), assigned field

($p = 0.319$), employment sector ($p = 0.778$), and employment status ($p = 0.399$). The correlation between socio-demographic profile and vaccine hesitancy of respondents was also evaluated. The vaccine hesitancy has no significant relationship to gender ($p = 0.259$), age ($p = 0.836$), marital status ($p = 0.793$), assigned field ($p = 0.875$), employment sector ($p = 0.696$), and to employment status ($p = 0.128$). There is no significant correlation between vaccine conspiracy beliefs of the respondents and their socio-demographic profile. There is no relationship between vaccine conspiracy beliefs and gender ($p = 0.909$), age ($p = 0.281$), marital status ($p = 0.118$), assigned field ($p = 0.669$), employment sector ($p = 0.634$), and employment status ($p = 0.210$).

The socio-demographic variables do not have an association in determining the vaccine

hesitancy. Furthermore, it cannot determine the conspiracy beliefs of respondents. A study by Freeman et al. [5] stated that socio-demographics were not useful in expounding the vaccine hesitancy. In conspiracy theories, socio-demographics are not a decisive causal variable [36].

CONCLUSION AND RECOMMENDATION

The AstraZeneca COVID-19 vaccine dominated the ranking order, followed by Pfizer/BioNTech, Sinovac, Moderna, Johnson & Johnson, Sputnik V, Novavax, and Sinopharm vaccine. Most of the respondents (49.2%) selected the Pfizer/BioNTech COVID-19 vaccine as their preferred vaccine. The respondents endorsed low level of vaccine hesitancy and vaccine conspiracy beliefs. Therefore, the level of vaccine acceptance among radiologic technologists was high. In cases of high vaccine hesitancy, Rutten et al. [17] stated different interventions such as individual-level, interpersonal-level, and organization-level interventions as strategies to address the issue. There was no significant relationship between the socio-demographic profile and vaccine preference, hesitancy, and conspiracy beliefs of the respondents. However, a fundamental study should be conducted regarding the correlation of vaccine hesitancy and vaccine conspiracy beliefs.

Table 4. Correlation of socio-demographic profile to vaccine preference, hesitancy, and conspiracy beliefs

Socio-demographic Items			Sum of Squares	df	Mean Square	F	p-value
Gender	Vaccine Preference	Between groups	3.012	1	3.012	1.806	0.184
		Within groups	98.398	59	1.668		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.266	1	.266	1.297	0.259
		Within groups	12.122	59	.205		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	.018	1	.018	.013	0.909
		Within groups	78.966	59	1.338		
		Total	78.983	60			
Age	Vaccine Preference	Between groups	10.437	6	1.740	1.033	0.415
		Within groups	90.973	54	1.685		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.601	6	.100	.459	0.836
		Within groups	11.788	54	.218		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	9.852	6	1.642	1.283	0.281
		Within groups	69.132	54	1.280		
		Total	78.983	60			
Marital Status	Vaccine Preference	Between groups	.210	1	.210	.122	0.728
		Within groups	101.200	59	1.715		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.015	1	.015	.069	0.793
		Within groups	12.374	59	.210		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	3.228	1	3.228	2.514	0.118
		Within groups	75.755	59	1.284		
		Total	78.983	60			
Assigned Field	Vaccine Preference	Between groups	8.033	4	2.008	1.204	0.319
		Within groups	93.377	56	1.667		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.262	4	.065	.302	0.875
		Within groups	12.126	56	.217		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	3.213	4	.803	.594	0.669
		Within groups	75.770	56	1.353		
		Total	78.983	60			
Employment Sector	Vaccine Preference	Between groups	.873	2	.437	.252	0.778
		Within groups	100.536	58	1.733		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.154	2	.077	.364	0.696
		Within groups	12.235	58	.211		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	1.233	2	.617	.460	0.634
		Within groups	77.750	58	1.341		
		Total	78.983	60			
Employment Status	Vaccine Preference	Between groups	1.227	1	1.227	.722	0.399
		Within groups	100.183	59	1.698		
		Total	101.410	60			
	Vaccine Hesitancy	Between groups	.482	1	.482	2.386	0.128
		Within groups	11.907	59	.202		
		Total	12.388	60			
	Conspiracy Beliefs	Between groups	2.094	1	2.094	1.607	0.210
		Within groups	76.889	59	1.303		
		Total	78.983	60			

Note: p-value <0.05 was significant;
df = degree of freedom (N-1): F = F statistics

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