

Research Article

Exploring Etymological Roots of COVID-19 Vaccine Hesitancy: A Study of Young Adults in Sri Lanka

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Abstract

The most efficient and ideal way to reduce the COVID-19 epidemic is through vaccination. However, the biggest obstacle to universal vaccination coverage, though, is vaccine hesitancy. Therefore, the present study attempts to investigate underlying concerns of COVID-19 vaccine hesitancy among young adults in Sri Lanka through a cross-sectional survey that covered 601 young people between the ages of 15-35 years. An online self-administered questionnaire was distributed among the sample which was drawn under a simple random sampling technique. According to quantitative outcomes, a gradual increase in the hesitancy of the COVID-19 vaccine has been identified towards three stages of vaccine hesitancy: initial doses (37%), booster doses (59%), and future vaccination (60%). Greater reluctance was shown by respondents who identified as female, married, and Sinopharm recipients. Side effects and allergy-related issues were the concerns that were most frequently brought up in relation to vaccines. A third-party requirement, according to 34% of respondents, was the main reason why the vaccine was used. The results of the qualitative analysis showed that after receiving the initial dosages, most respondents were worried about "exhaustion and body pain," "impaired eyesight," and "menstrual cycle disorders," which made them hesitant to receive the subsequent doses of the vaccine. The study provides a novel insight into the as-yet unidentified issues of vaccine hesitancy that result in COVID-19 vaccine refusal. Additionally, it offers insightful information to reduce skepticism about the COVID-19 vaccines by boosting vaccine safety and effectiveness, which can help direct future efforts to improve Sri Lankan public acceptance of COVID or any other vaccination program.

Keywords: *COVID-19, Hesitancy, Qualitative, Underlying concerns, Young adults*

1. Introduction

The World Health Organization declared COVID-19 as a global epidemic at the end of 2019 which caused an unprecedented crisis for global public health (WHO, 2019). It resulted in an unprecedented global public health crisis and a massive disease burden, which has negatively impacted almost every sector and every corner of the world. The development and implementation of a vaccine is recognized as one of the most successful public measures to control, eliminate, and eradicate the pandemic. Due to the rapid increase in mortality and morbidity of COVID-19 in Sri Lanka, the government launched the national COVID-19 vaccination program in January 2021, which aims to manage the outbreak and prevent transmission while progressively controlling herd immunity.

However, the global COVID-19 vaccination program has been administered worldwide under the COVAX facility, and it has had to face several challenges which may impact its success (Rodriguez-Morales et al., 2022). A significant number of people globally have been hesitant to get vaccinated, which has led to low vaccination coverage. As a result of that, the World Health Organization recognized hesitancy toward COVID-19 vaccination as one of the top 10 threats to global health that have been negatively impacting the attainment of vaccination goals in every nation all over the world (WHO, 2019).

Due to the rapid increase in mortality and morbidity of COVID-19 in Sri Lanka, the government launched the national COVID-19 vaccination program in January 2021. Although successfully administering and implementing an effective immunization process by the government, uncertainty about the public acceptance of COVID-19 vaccination stands out as a crucial challenge in Sri Lanka. Most notably, the spread of misinformation, rumors, and myths via social media has created a variety of perspectives on the COVID-19 vaccine.

As a critical challenge, analysis of vaccination-related statistics figures out that the Sri Lankan young population is a high hesitancy group compared to the other priority groups for vaccination. According to the official statistics from the Ministry of Health, the first dose of COVID-19 vaccination has been received by 97% of the vast majority of Sri Lankans. Moving on to the second dose of the COVID-19 vaccine, the receiving level was remarkably reduced to 84% among the Sri Lankan population. Beyond that, more than five million gaps have been reported between those who received the booster dose and the initial doses. This situation alarmingly highlights the significant reduction in vaccine acceptance along with subsequent doses of the COVID-19 vaccine that will have a direct negative impact on the 80% vaccine coverage target in Sri Lanka.

A review of the literature highlighted that vaccine hesitancy is a severe public health concern in Sri Lanka (Wijerathne et al. 2021; Wijesinghe et al. 2021) as well as around the world. Therefore, a considerable amount of research and studies have

been conducted with the primary intention of evaluating the level of vaccine acceptance and hesitancy and identifying the common concerns around the vaccine against the coronavirus. Available scholarly evidence on the subject area in different countries revealed that vaccine hesitancy was driven by a common set of reasons such as side effects and allergy issues, safety and efficacy issues, and misinformation regarding vaccination (Daly et al. 2021; Fisher et al. 2020).

The main objective of the study is to investigate underlying concerns about COVID-19 vaccine hesitancy among young adults in Sri Lanka. The sub-objective included exploring attitudes, and awareness toward COVID-19 vaccines. In addition, the study has evaluated the level of hesitancy toward COVID-19 vaccines available in Sri Lanka to enhance the understanding of quantitative research observations. Furthermore, this study provided a novel contribution to the current unique range access literature by exploring vaccine hesitancy along with subsequent vaccine doses and vaccine brand preference in exceptional reference to the youth population in Sri Lanka. According to the literature, it was revealed that this sort of exploratory study is lacking in the Sri Lankan context and current research was the first study that assesses COVID-19 vaccine hesitancy and underlying concerns of vaccine refusal among a Sri Lankan young adult by evaluating a wide range of sociodemographic predictors.

This study would provide valuable insights to policymakers and health authorities to restructure inoculation systems, tending to concern about vaccine hesitancy and paying more endeavor improving transparent communication about the different types of currently available COVID-19 vaccines in Sri Lanka. The findings of the study would be encouraged to address negative perceptions, distrust, and misinformation about the COVID-19 vaccine among the Sri Lankan youth generation. That would have a positive impact on achieving sufficient vaccine coverage by improving communication transparency about the different types of currently available COVID-19 vaccines in Sri Lanka.

2. Material and Methods

2.1. Sampling and data collection

This study was conducted as an online and cross-sectional survey among young adults aged 15 to 35 living in Sri Lanka in the period of March to May 2022. To generate more accurate insight by reaching more samples, the study selected the most densely populated districts in Sri Lanka, which are Colombo, Kurunegala, Gampaha, Kandy, and Galle. The sample recruitment process has been employed through two main stages. In the first phase, the crowdsourcing sampling technique was used to source suitable candidates via social media platforms which led to a primary recruitment pool. The final recruitment for the study was drawn from the main respondent pool using a simple random sampling technique, considering a 3:1

sample selection ratio. The minimum sample size for this study was estimated to be 601, with a 95% confidence level and a 5% margin of error. Individuals were considered as the unit of analysis in the current study as questionnaires were prepared to be filled out by each individual. The semi-structured questionnaire prepared for the study aligned with prior studies and surveys (UNICEF, 2021) on Covid-19 vaccination, while telephone interviews were also used to conduct the in-depth interviews among 30 participants who had already completed the questionnaire and given their consent to participate for the qualitative investigation of the study, which was conducted between May 15 and June 30, 2022. The recruitment of interview participants were performed using a combination of volunteer and purposive sampling among those who responded to the quantitative survey.

2.2. Data analysis

Quantitative data analysis was performed using descriptive statistics and qualitative data was analyzed using Braun and Clarke's thematic analysis approach (Braun and Clarke, 2006), which manually followed familiarization, coding, generating themes, reviewing themes, defining and naming themes to obtain rich and insightful findings on COVID-19 vaccine hesitancy. As a first step of the process, the authors created a transcription of the verbal data and then generated a list of initial codes by highlighting key information from the responses. After the basic analysis steps, the process moved to the refinement of the themes and defining the final names for the investigated themes by considering the quality of conciseness and to what extent the name gives the reader an immediate sense of concern. Finally, the study provides a detailed analysis of the themes which highlights the underlying causes of vaccine hesitancy and refusal.

3. Results

3.1. Quantitative findings of the study

The current survey has assessed six different types of sociodemographic variables, which are age, gender, marital status, religion, education level, and geographical location of respondents. The total number of respondents was categorized into four main age categories as age 15 to 19, 20 to 24, 25 to 29, and 30 to 35. The majority of the participants represented the 20 to 24-year age category which is 34.28%, while the remaining 65.72% were distributed among the other three categories. As for the demographic locations, the study considered the most densely populated five districts of Sri Lanka, which is Colombo, Gampaha, Galle, Kurunegala, and Kandy. Among those, Colombo had the highest elevated portrayal (23.96%) and the other districts had the following levels respectively, 22.46% from Gampaha, 21.63% from Kurunegala, 16.14% from Kandy, and 15.81% from Galle. A high proportion (80%) of respondents were unmarried, and nearly two-thirds of

participants (427, 71.05%) were Buddhists. Others incorporated 11.98% of Christians, 6.16% of Muslims, and 10.82% of Hindus. Current education levels of young adults in Sri Lanka are categorized under five educational levels and the majority were found to be pursuing bachelor's degrees accounting to 48.59% while the least number of respondents were found to pursue professional qualifications representing 12.98%.

3.2 Prevalence of COVID-19 vaccine hesitancy

Overall, 60% of young adults have received at least one dose of any vaccine available in Sri Lanka. Then, 57% of respondents had received both the first and second doses of the COVID-19 vaccine, indicating that they had been fully vaccinated. It was noticed that 3% of young adults obtained only a single dose of the vaccine without continuing their immunization process to be fully vaccinated. Furthermore, the rate of booster vaccine receipt was reported as 34%, indicating an approximate 23% vast gap between those who received the booster dose and those who received the second dose. These findings clearly reflect that there is a significant reduction in vaccine acceptance with subsequent doses of the COVID-19 vaccine.

As per the results in Figure 1, hesitancy gradually increased over initial doses (37%), booster dose (59%), and hesitancy for future COVID-19 vaccines (60%). During the initial vaccination phase, 63% of the sample had no hesitation about receiving the vaccine, while 37% of the vaccine-eligible sample showed reluctance towards initial doses of the COVID-19 vaccine. However, when it comes to booster dosages, the percentage of non-hesitant people drops dramatically. The highest proportion of hesitancy was reported in the booster vaccine stage, which is 59%. Furthermore, there is a trend that shows improved reluctance for future vaccines, as shown in the below chart, where hesitancy is further raised compared to the booster doses discussed.

A special scenario can be identified from those results. The respondents showed low hesitancy levels for initial doses and they really wanted to have the vaccine. However, it was shown that, the hesitancy has progressively increased as more doses have been prescribed. The frequency of vaccine intake can be attributed to this hesitancy. Therefore, the authors could alarmingly highlight that, Sri Lankan youth might not be immunized if it is available in the fourth or fifth doses.

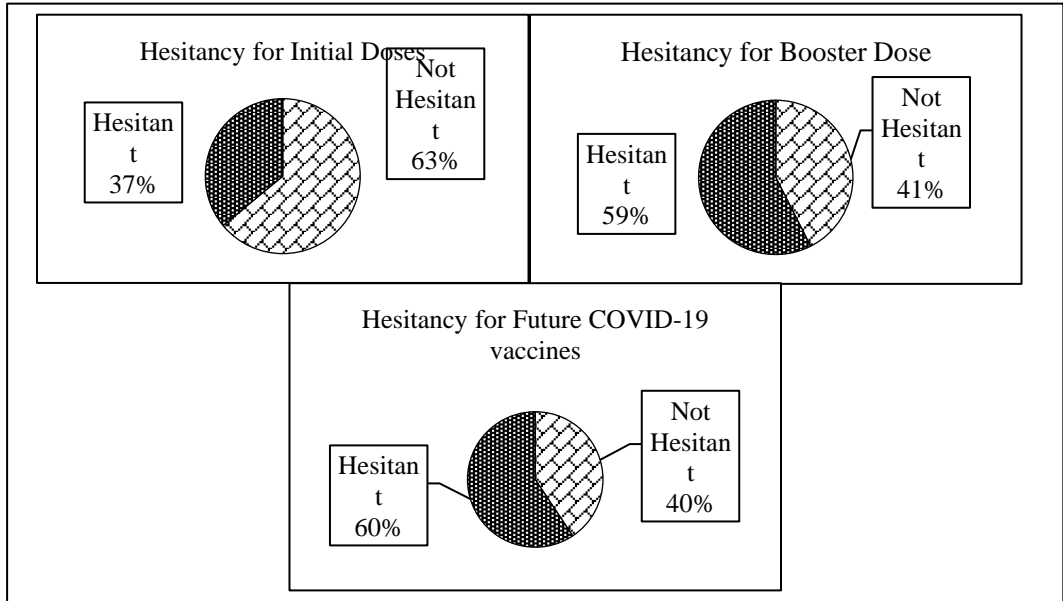


Figure 1: COVID-19 vaccine hesitancy by dosages

Figure 2 illustrated that, the respondents who received Sinopharm revealed a high level of hesitancy (66%), which represented two-thirds of the proportion compared to other vaccine brands. Hesitancy for Sinopharm was a great proportion compared to the other vaccine brands. In addition, 27% of Pfizer vaccine recipients were hesitant to receive the vaccine, whereas the Moderna vaccine had a lower level of hesitancy, which was only 4%. Therefore, it can be concluded that the majority of the Sinopharm-received young adults would not have been confident about the vaccine that they had.

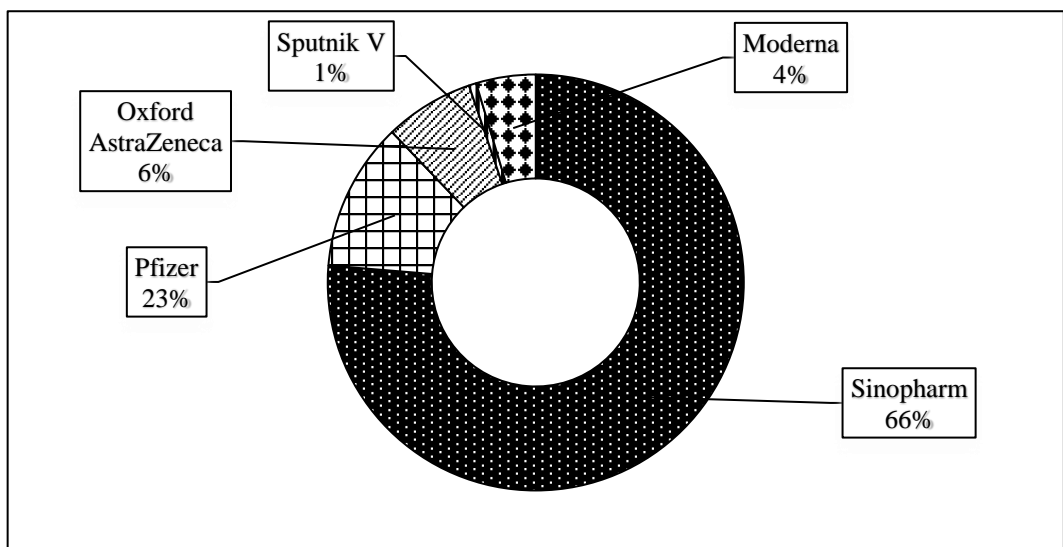


Figure 2: COVID-19 vaccine hesitancy by individual vaccine brand preferences

The authors also observed that vaccine hesitancy rates varied with various demographic characteristics. Among those, gender plays a critical role. According to the analysis of prevalence, Figure 3 illustrated overall female respondents and married respondents are more skeptical of the COVID-19 vaccine than male respondents and unmarried respondents in all vaccine phases. For the initial dose, both males (31.2%) and females (42.2%) showed fewer hesitancy levels compared to the other doses. When it comes to subsequent vaccine dosage levels, female vaccine hesitancy has significantly increased in booster dose, which is 66.7%. By showing a vast gap, the female vaccine hesitancy rate for future dosages was reported as 71.9%, which is higher than the male response rate of 22.4%.

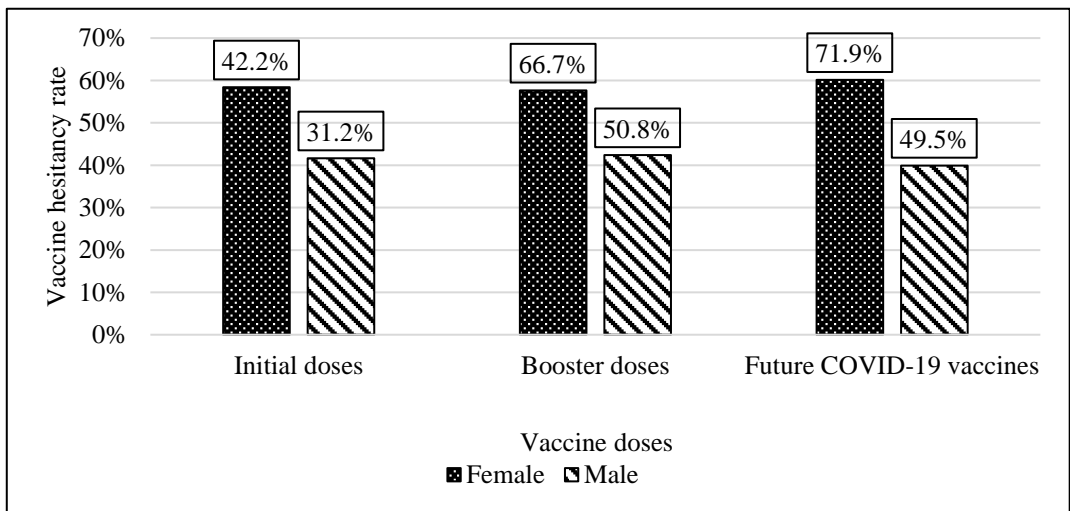


Figure 3: COVID-19 vaccine hesitancy by gender distribution

Figure 4 depicts the percentage change in reluctance by marital status during the COVID-19 initial vaccine phase, booster doses, and subsequent COVID-19 vaccinations.

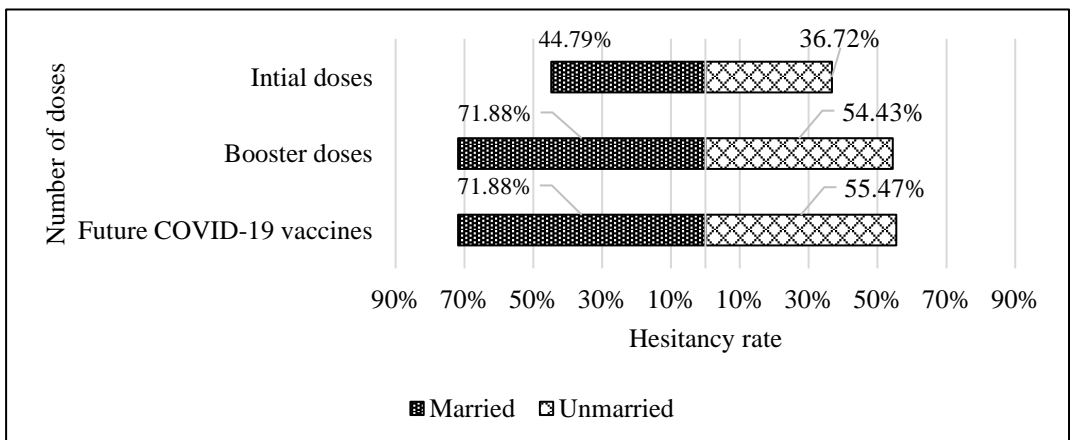


Figure 4: COVID-19 vaccine hesitancy by marital status

The lowest amount of reluctance is demonstrated here in the early stages in both married and unmarried groups, and hesitancy is substantially lower in unmarried people. However, when booster doses are given, there is a considerable improvement, and more than 71.88% of the married and 54.43% of the unmarried sample have begun to exhibit trepidation towards vaccines.

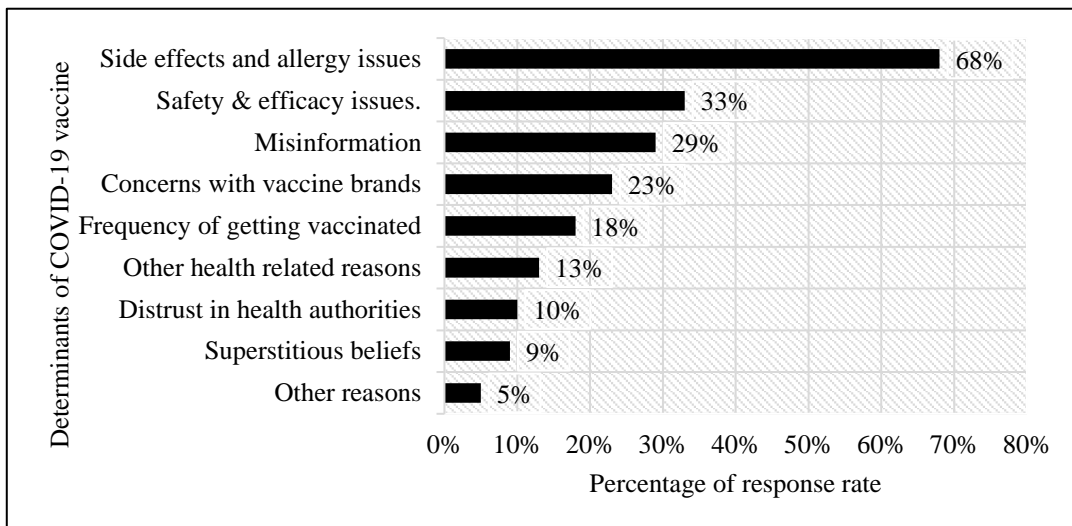


Figure 5: Determinants of COVID-19 vaccine hesitancy

According to Figure 5 outputs, typically Sri Lankan young adults have concerns related to side effects and allergy issues, safety and efficacy issues, and misinformation regarding vaccination. Finally, the findings reflect the main reason for the Sri Lankan youth population not getting vaccinated as side effects and allergy issues, while religious reasons were not a significant factor contributing to vaccine hesitancy among young adults.

Therefore, the study investigated why hesitant respondents were tempted to get the vaccine. Table 1 outcomes incorporate the respondents who were initially hesitant to be vaccinated but received the vaccine based on any of the above reasons. According to the findings, the motivation behind why an ever-increasing number of respondents are being immunized is that it has been required in schools, universities, and places of employment. 34% of respondents expressed the above requirement as their enabling factor for getting vaccinated. As another reason for receiving the vaccine, it was required by government regulations (8%). According to the majority of respondents' opinion, they tend to receive any COVID-19 vaccine since it was required by any third party.

Table 1: Factors that changed respondents’ minds to be vaccinated

Factors that changed respondents’ mind		
It was required from school/university/Place of employment.		34%
I was given more scientific or medical information.		18%
Rapid increase of getting sick/dying from COVID-19.		16%
It was required for me to travel overseas.		11%
It would allow me to access social activities more freely.		10%
It was required by government regulations.		8%
I saw influential people who opposed the vaccine changed their decision.		3%

According to Table 2 results, respondents have different attitudes towards COVID-19 vaccination. More than half of the respondents stated positive attitudes toward vaccination (80%). The most common agreement was “I think it is very important to receive the COVID-19 vaccine to protect people from the Coronavirus”. It showed 24% of the total. Only 20% of respondents had a negative attitude toward vaccination. Among those negative statements, majority of the proportion represent the statement “I think the COVID-19 vaccine probably will not work” which is 8%.

Table 2: Attitudes towards the COVID-19 vaccine

	Attitude statement	Count	Percentage	Total percentage
Positive attitudes towards COVID-19 vaccine	I think the COVID-19 vaccine was really effective in controlling the COVID-19 pandemic.	209	26%	80%
	I think it is very important to receive COVID-19 vaccine to protect people from the Corona virus.	190	24%	

	I believe having the COVID-19 vaccine will reduce the impact of the disease on me.	240	30%	
Negative attitudes towards COVID-19 vaccine	I think the COVID-19 vaccine probably will not work.	52	7%	
	I do not trust the COVID-19 vaccine.	63	8%	20%
	I do not need any COVID-19 vaccine because I am healthy and at low risk for infection.	44	5%	

3.3 Qualitative findings of the study

The qualitative findings of the study found several specific and unrevealed underlying concerns in the Sri Lankan context. Figure 6 indicates the identified themes for the special concerns reported among interview participants. After receiving initial doses, a substantial percentage of respondents expressed concern about "exhaustion and body pain," "impaired eyesight," and "menstrual cycle disorders," which made them reluctant to receive the subsequent doses of the vaccine.

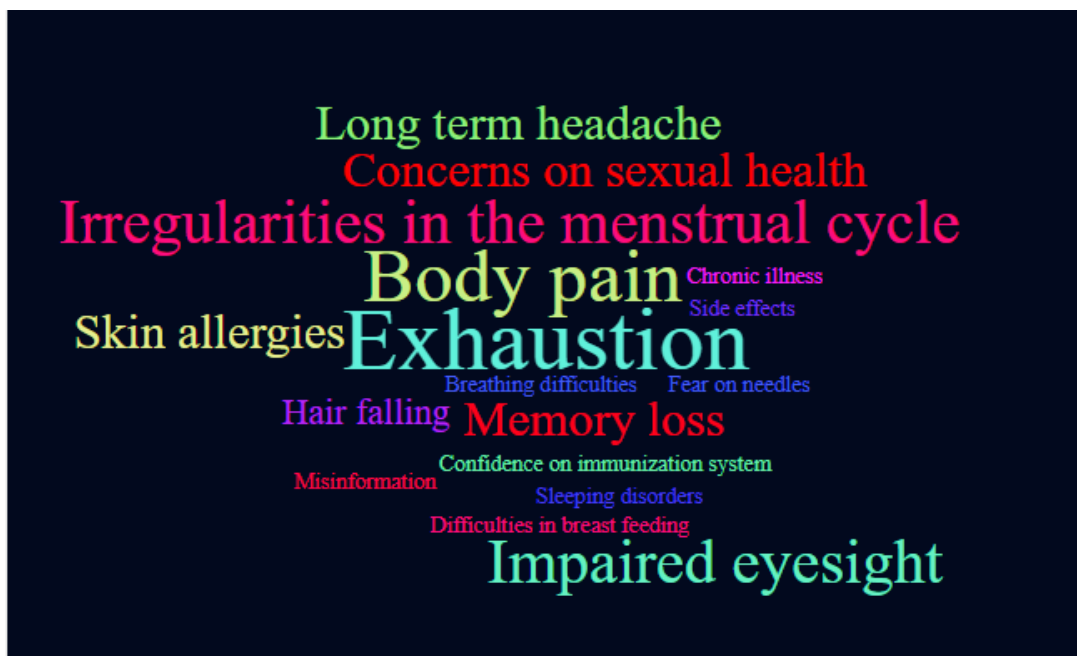


Figure 6: Investigated underlying concerns of vaccine hesitancy

As per the results, long-term fatigue caused most respondents to be hesitant about the COVID-19 vaccine. Apart from that, most of the key concerns were body pain, impaired eyesight, and menstrual abnormalities. As mentioned by the respondents after taking initial doses, they experienced such difficulties and were reluctant to have other doses.

4. Discussion

Most of the findings that are generated from the study are inextricably linked to previous research, while others were made in opposition to previous findings. Vaccine hesitance has been a worldwide worry for quite a long time, and the circumstance is turning out to be more argumentative with the flow of COVID-19 vaccination due to the infodemic and paranoid notions encompassing the infection. Global efforts to contain the current COVID-19 pandemic may face significant challenges as a result of the low rate of coronavirus immunization recognition recorded in various countries (Maraqa et al., 2021). Especially South Asian countries encounter different forms of vaccine hesitancies (Hawllader et al., 2022). But, according to the scholarly literature review, this is the first study that investigates vaccine hesitancy for different doses and evaluates the vaccine hesitancy for upcoming doses of COVID disease.

Another aspect of hesitancy is brand preference. This was a highly visible concern among the initial stages of the vaccination process. At the beginning of the vaccination campaign in Sri Lanka, the government distributed more Sinopharm vaccines. People were therefore forced to take the government-offered vaccine despite their preference for a different kind of vaccine as they had no other option. The main concern, in the beginning, was vaccine brand preference because the majority of younger people sought out mRNA vaccines like those produced by Pfizer. People had to get any vaccine available at the time as those vaccines weren't readily available. However, brand preference severely affected all the COVID immunization programs world widely (Rzymiski et al., 2021). It was getting delayed for people to be vaccinated.

According to the analysis of prevalence, overall female respondents and married respondents are more skeptical of the COVID-19 vaccine than male respondents and unmarried respondents in all vaccine phases. This is the case even in numerous worldwide studies, regardless of the sample considered. Biswas et al. (2021) and Lucia et al. (2020) showed in their studies a higher hesitancy rate was reported depending on being a female or married respondent. The female population shows the highest hesitancy rate even among healthcare workers (Maraqa et al., 2021). It can be concluded that gender difference and marital status have a significant effect on vaccine hesitancy levels among young adults in Sri Lanka. It was clearly visible that female young adults showed hesitation in every vaccination phase of vaccination rather than male respondents. According to the results, this pattern appears to

improve more over time and in future phases, which, if not treated properly, can lead to serious difficulties in the future.

Many studies represent vaccine hesitancy between 40%-55% in different corners of the world (Dereje et al., 2021). Before the presentation of COVID-19 shots in mid-December 2020, generous stresses over the vaccine's safety, viability, and cost were communicated by individuals from varying backgrounds (Daly et al., 2021). Numerous studies have identified a number of factors that were mostly responsible for hesitation regardless of the country or region.

In any case, regardless of the justification behind this hesitation, the level of getting vaccinated in Sri Lanka was relatively high. The results also illustrated that 60% of receiving levels for initial doses. It was greater than the study of previous Sri Lankan studies conducted at the end of 2020 (Wijesinghe et al., 2021). Therefore, the study investigated why hesitant respondents were tempted to get the vaccine. According to the respondents' opinion, they tend to receive any COVID-19 vaccine since it was required by any third party. Not only Sri Lanka, but also some African countries showed third-party influence (Abebe, Shitu and Mose, 2021).

When comes to information, it is the most crucial role of any vaccination program. Because the vaccinated individuals' decisions are entirely based on the accuracy of information (Karabela et al., 2021). Inaccurate information drove people to be vaccine hesitant (Piltch-Loeb et al., 2021). Cause of this, the authors paid attention to what sources of information influenced youngsters to be more hesitant.

Knowledge is the most critical aspect of taking decisions regarding vaccination. As the underlying driver of hesitancy, it very well may be distinguished, as the lack of awareness about vaccines and understanding of the course of vaccine development (Yasmin et al., 2021). The knowledge was checked under three areas about vaccination as knowledge of vaccine development, effectiveness, and efficiency of vaccines, and how it impacts human immunization.

The findings of this study have concluded that the majority of individuals in Sri Lanka's young community did not have proper knowledge and awareness about the vaccine, which has created more skeptical conditions for obtaining the novel vaccine against COVID-19. But compared to other South Asian countries, knowledge and awareness about vaccines show some higher value (Mahmud et al., 2021). But some African countries showed high awareness about vaccine development than Sri Lankans (Abebe, Shitu and Mose, 2021).

It is normal to experience some minor side effects after each vaccine. But it should be noted that among the community that is subjected to the above research, abnormal side effects are seen beyond this normal situation. But hair loss after getting a vaccine is unusual. Many people have considerable hair loss a few months following a high fever or recovery from an illness. But people with this problem have not contracted COVID-19, and the condition has been seen to flare up after receiving the vaccine. In addition, there can be seen some severe concerns such as long-term fatigue, impaired eyesight, and breathing difficulties. Vaccine-induced uveitis is a type of

eye inflammation that causes blurred and decreased vision, floaters, and light sensitivity. It is a well-known condition associated with various vaccinations (Benage and Fraunfelder, 2016). But some respondents experienced long-term visual impairments which is not a common concern. No study has found that such cases have occurred in any community in Sri Lanka after getting the COVID-19 vaccine. These conditions are very serious and may be life-threatening. Because of this, it is the responsibility of the authorities to find out the causes of such situations and take appropriate measures for them. Also, measures should be taken to refer those who have these conditions to proper future treatment. There is a chance that the people who have such situations will show fear of taking the vaccine because they share the various side-effects of the vaccine with other people and socialize their vaccination experience. These sorts of circumstances can be called social and subjective norms (Breslin et al., 2021).

The intention of interviewed participants to receive a COVID-19 vaccine was influenced by their own risk-benefit assessment, which is a dynamic factor. Undoubtedly, people's capacity to embrace immunization changes depending upon the phase of the pandemic and their apparent gamble of disease. According to the findings, respondents who did not try to get the vaccine indicated that they would be open to getting it if their situation changed and they became at risk of catching COVID-19. It was additionally found that immunization data is a significant inner determinant with mixed effects on perspectives toward COVID-19 inoculation and subsidiary illustrative topics. The more confused individuals are during COVID-19, the more uncertain they are about acknowledging the antibody (Lockyer et al., 2021). In order for the public to make their own vaccination decisions, it is crucial to provide accurate and current information on disease outbreaks and vaccines.

Based on the findings, the present study is recommended to enhance awareness and knowledge of the COVID-19 vaccine among young individuals, thereby increasing overall vaccine acceptance in Sri Lanka. Health officials should implement educational and policy-level interventions that demonstrate transparent and evidence-based information about the vaccine, in order to promote COVID-19 immunization programs across the country. The current study has different limitations that should be noted while assessing the outcomes. Regardless, the utilization of an internet-based overview might cause test predisposition, bringing about outcomes that are not generalizable to the overall young population, as confirmed by the shortfall of portrayal from a few territories. The current study had the option to find a great deal that the hesitancy rate is most noteworthy in the young generation. In this manner, the authors expect to conduct future studies by using more quantitative techniques to generalize the statistical relationship between vaccine hesitancy and demographic factors. Also, an in-depth qualitative study to investigate underlying concerns of vaccine hesitancy among young adults in Sri Lanka.

5. Conclusion

This study assessed the hesitancy of COVID-19 vaccination among young Sri Lankans by considering socio-demographic characteristics and other factors that account for the vaccine. The current study induced a novel outcome of vaccine hesitancy by assessing vaccine hesitancy along with three phases of vaccination in Sri Lanka, and the results revealed that reluctance to receive vaccines gradually increased through the initial doses, booster doses, and future COVID vaccines. The main reasons for vaccine hesitancy are side effects and allergy issues, safety and efficacy issues, and misinformation. Most of the hesitant respondents tend to have been vaccinated cause of requirements made by a third party.

The current study has different limitations that should be noted while assessing the outcomes. Regardless, the utilization of an internet-based overview might cause test predisposition, bringing about outcomes that are not generalizable to the overall young population, as confirmed by the shortfall of portrayal from a few territories.

Policy implications are recommended to enhance awareness and knowledge of the COVID-19 vaccine among young individuals, thereby increasing overall vaccine acceptance in Sri Lanka. Health officials should implement educational and policy-level interventions that demonstrate transparent and evidence-based information about the vaccine, in order to promote COVID-19 immunization programs across the country.

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