

ORIGINAL ARTICLE

## Awareness towards Optional Vaccinations among Pre-clinical MBBS Students in a Medical College in Malaysia.

Anis Qamarina H<sup>1</sup>, Arifah Qhaliesya R<sup>1</sup>, Athirah Farhanah I<sup>1</sup>, Aufa M<sup>1</sup>, Auni Najwa Z<sup>1</sup>, Wan Nur Atiqah Batrisyia MA<sup>1</sup>, Vignesh Ramachandran<sup>2</sup> and Pradeep Palanisamy<sup>2\*</sup>

<sup>1</sup>Faculty of Medicine, Royal College of Medicine Perak, Universiti Kuala Lumpur, Ipoh, Malaysia

<sup>2</sup>Preclinical Department, Faculty of Medicine, Royal College of Medicine Perak, Universiti Kuala Lumpur, Ipoh, Malaysia

### Corresponding Author

Dr. Pradeep Palanisamy

UniKL Royal College of Medicine Perak, No. 3, Jalan Greentown, 30450 Ipoh, Malaysia.

Email: [pradeep@unikl.edu.my](mailto:pradeep@unikl.edu.my)

### Abstract

**Background:** Optional vaccines are just as important as the mandatory but one may choose to administer them to children, based on doctor's advice. The utilization of these optional vaccines are low in Malaysia and one of the reasons cited is lack of awareness among parents partially due to lack of adequate information from the health care workers.

**Aim:** This research aims to study the awareness towards optional vaccinations (Pneumococcal, Influenza, Rotavirus, Hepatitis A and Chicken pox) in Malaysia among Pre-Clinical MBBS students in Royal College of Medicine Perak, Universiti Kuala Lumpur, Ipoh, Malaysia (UniKL RCMP).

**Materials and method:** This cross-sectional observational study was conducted in February - March 2021. The study population included pre-clinical MBBS students of UniKL Royal College of Medicine Perak. Quota sampling method was done. 116 pre-clinical MBBS students were chosen and an online questionnaire in Google Form was provided to the students to be answered. Analysis was done in Microsoft Excel.

**Results:** Overall, a significant number of the students (75%) were not aware about the optional vaccination in Malaysia. Even though there was no significant difference in the level of awareness between year 1 and year 2 MBBS students, the trend was Year 1 students were more aware than the year 2 students. There was also no significant association between the gender and level of awareness towards optional vaccination.

**Conclusion:** In conclusion, this study showed that pre-clinical medical students have significant knowledge gaps towards optional vaccination. This should be addressed early during medical training as this ensures these medical students will become knowledgeable healthcare professionals later, enabling the dissemination of adequate information to the parents.

**Keywords:** Vaccines, Optional vaccination, MBBS students, medical students

## Introduction

Vaccines are generally perceived by the medical community as the most cost-effective public health intervention in preventing diseases from spreading in the population of human beings.<sup>[1]</sup> Vaccinations have contributed to the worldwide eradication of smallpox, disappearance of poliomyelitis in most countries and decrease in the mortality of several infectious diseases in two centuries.<sup>[2]</sup> Administration of a vaccine helps the immune system to develop protection from specific bacteria and viruses. Immunization is not important to only one person but the community as a whole. For example, a vaccinated child is not only protecting himself but also other people by preventing the transmission of vaccine preventable diseases. A study that had been carried out in 2019 found that 2.5 million lives around the world are saved by vaccination against tuberculosis, poliomyelitis, diphtheria, tetanus and measles every year.<sup>[3]</sup>

A healthy and efficient way to shield an infant from risk of complications from apparently harmless infections has been shown through taking optional vaccinations.<sup>[4]</sup> Additional or optional vaccines such as Rotavirus, Pneumococcal, Influenza, Hepatitis A and Varicella are just as important as the mandatory but one may choose to administer them to children, based on doctor's advice.<sup>[5]</sup> Optional vaccines which are not compulsory but have been proven to reduce mortality by decreasing the risk to be infected by life threatening infectious diseases. Some of the optional vaccines would be rotavirus, chickenpox (varicella), hepatitis A, pneumococcal and influenza viral vaccines which are equally important as compulsory vaccination to reduce complications of certain diseases.<sup>[6]</sup>

In Malaysia, many parents may not realize how necessary these vaccines are considering that the mandatory childhood immunisation have already been taken. They have been verified as a safe and effective way to prevent worse complications of certain diseases. Based on a study, the usage of optional vaccines is low in spite of the positive attitudes towards immunisation. Only 21% of

children received all major optional vaccines because of several factors such as birth at private hospitals, family with higher income, and higher maternal education. The findings revealed that cost and lack of parental awareness were the greatest obstacles to optional vaccine administration. Increasing the uptake of these vaccines can rise the potential to decrease mortality from vaccine-preventable diseases.<sup>[7]</sup> Furthermore, in a study, participants were asked about their opinion on immunisation whether it is a positive or negative intervention. Just over half of the participants presented positive views vaccines protecting the population against disease. Some participants were extremely worried by vaccinations because of the side effects. They tend to focus on short-term rather than long-term effects, typically discomfort surrounding the administration site of vaccine. Long-term side effects mentioned included fertility problems, negative effects on immune system and reduced resistance to diseases being vaccinated against. Their understandings of how the vaccines are developed and monitored could influence vaccine-related decision making and uptake throughout life. The teenage years are a key chance to promote vaccination to future parents.<sup>[8]</sup> A study related to the vaccination perception came to a conclusion where the contribution of a person in medical field influence the attitude towards vaccination.<sup>[9]</sup> In a review of 126 documents of the grey literature to identify reasons why eligible children had incomplete or no vaccinations access, the most cited factor was the lack of parental knowledge in the documents.<sup>[10]</sup> Lack of knowledge about the correct and specific timing of the immunization schedule for their children was a significant predictor of incomplete immunization in Malaysia.<sup>[11]</sup> To combat this, it is vital to focus on the importance of both parents and health care workers in decision making. This is because educational strategies to increase their knowledge in the area of vaccine safety systems might

change beliefs and improve trust in the system in the future.<sup>[12]</sup>

From these findings, it is clear that majority of people still are not aware of advantages of taking optional vaccination because of cost, scepticism towards side effects and lack of awareness. Trust in the health provider and in their vaccine advice is key in parental decisions<sup>[13]</sup> highlighting the importance of ensuring that healthcare providers are well educated about the importance, safety and effectiveness of vaccines. Thus, we aim to find out the awareness towards optional vaccinations among pre-clinical MBBS students in our medical college.

## Methods

This cross-sectional study was performed among preclinical MBBS students in UniKL RCMP over a period of 6 weeks from February – March 2021. The sample size of this study was calculated as 116 with the confidence limit of 95% using the online sample size calculator (OpenEpi, Version 3, open source calculator). Preclinical MBBS students willing to participate were included in the study. Of those included, quota sampling method was used to choose students that will participate in the study. Targeted samples were informed about the study and permission was asked through the Participants' Consent Form. Questionnaires in Google Form were distributed among pre-clinical MBBS students of UniKL RCMP. The questionnaire consisted 2 parts which were Part A and Part B. Part A consisted of questions on socio-demographic background and Part B consisted of level of awareness towards optional vaccinations in Malaysia that had 22 questions to measure the knowledge of students about optional vaccinations offered in Malaysia such as Pneumococcal, Influenza, Rotavirus, Hepatitis A and Chicken pox vaccines. The students were classified as aware (who answered strongly agree and agree) and unaware (who answered neutral, disagree and strongly disagree). Microsoft Excel was used for data collection and analysis. Analysis was done in Microsoft Excel

using appropriate statistical test,  $p < 0.05$  was considered as significant. This study was conducted after obtaining necessary approval from the institute's ethics committee.

## Results

Of the 116 participants, 33.6% (n=39) were male students while 66.4% (n=77) were female students. 47.4% (n=55) of our respondents were from Year 1 as compared to 52.6% (n=61) were from Year 2. Overall, 87 students (75%) were not aware about optional vaccinations, while only 29 students (25%) were aware about the optional vaccinations.

Table 1 shows the differences in awareness towards optional vaccinations between year 1 and year 2 students, though not statistically significant. This was further extended to study the differences in awareness towards optional vaccinations against respiratory and gastrointestinal disorders. The results are shown in tables 2 and 3 which reveal that the trend favours increased awareness among the first year medical students though it is not significantly higher than year 2 students.

Table 4 shows the differences in the awareness among male and female students. 76.9% (n=30) of male students were not aware of the optional vaccinations in comparison to 74% (n=57) of female students, though the difference is not statistically significant.

## Discussion

Our research was done primarily to assess the awareness towards optional vaccinations such as Pneumococcal, Influenza, Rotavirus, Hepatitis A and Chicken pox in Malaysia among pre-Clinical MBBS students in UniKL RCMP, Ipoh. It is vital to measure the medical students' awareness so that any shortcomings can be detected early. It has to be noted that, recently, in Malaysia, immunisation for children less than two years old with the pneumococcal conjugate vaccine PCV10 has been added into the National Immunisation

Programme beginning December 2020 for infants born from January 2020.

Based on the results, it is observed that only 29% and 21.3% of students from Year 1 and Year 2 respectively are aware about these optional vaccinations, while 70.9% from Year 1 and 78.7% from Year 2 are categorized under not aware. This is concerning because optional vaccines are equally crucial as compulsory vaccines, which were easily and freely accessible from the government hospitals and health clinics.<sup>[14]</sup> Our results are similar to that from a study conducted at Case Western Reserve University School of Medicine which revealed that pre-clinical students have lower understanding towards these vaccines compared to that students in their clinical years.<sup>[15]</sup> Moreover, this also could indicate that these students have some barriers such as lack of knowledge and exposure to these vaccines.<sup>[16]</sup> The high number of “Unaware” students towards five optional vaccines are also consistent with a study carried out among Spanish medical students which showed only 22% of students were anticipated to receive one of the optional vaccination, Influenza vaccine.<sup>[17]</sup> Even though there is no significant difference in level of awareness between the year1 and year 2 students, our study shows the trend that students in year 1 are more knowledgeable compared to students in year 2 and this is maybe attributed to different sample size among year 1 and year 2 students and the topics covered in year 1 and year 2.

Regarding optional vaccinations against respiratory disorders only 52.7% of respondents from Year 1 and 44.3% from Year 2 are aware about pneumococcal and influenza vaccines. The difference is not statistically significant ( $p = 0.36$ ). However, the trend is towards more awareness among Year 1 students. The lack of awareness among medical students needs to be addressed as it is suggested that responsibility for increasing awareness should fall onto the healthcare providers, as parents are more likely to approve the vaccination if their physician recommends it.<sup>[18]</sup>

Based on our findings, 34 respondents from Year 1 (61.8%) and 33 respondents from Year 2 (54.1%) are aware about the optional vaccines which are Hepatitis A and Rotavirus vaccines against gastrointestinal diseases. Although the p value is not statistically significant ( $p=0.40$ ), but the trend is Year 1 has higher level of awareness compared to Year 2 respondents. This is similar to a study where the results show 88.60% of the respondents are aware of the concept of Hepatitis A vaccines and about 55.26% medical doctors in this study have good knowledge of Hepatitis vaccine.<sup>[19]</sup> Also, there is a study which states that all physicians are familiar with safety concerns about rotavirus vaccines.<sup>[20]</sup>

Overall, there is no significant difference in the level of awareness towards vaccination between genders ( $p=0.297$ ). At the global level, gender does not influence the immunisation coverage however, in some countries and communities where gender discrimination exists, male have greater access to vaccines than females. This is due to the unequal status of women in many societies have prevented them from accessing immunisation service. Therefore, they may lack information and awareness on the benefits of vaccination. To avoid this problem, gender-related barrier should be addressed to ensure both male and female have equal access to vaccines.<sup>[21]</sup>

## Conclusion

From these findings, we can conclude that many pre-clinical MBBS students are unaware about optional vaccinations. This maybe because of knowledge barriers due to lack of adequate reading regarding optional vaccinations among these students. The inadequate awareness towards optional vaccinations also could be because of lack of practice during pre-clinical years of medical study as medical training would give a good impact towards students’ understanding and awareness. Thus, to combat the growing vaccine hesitancy among the general public, adequate knowledge about vaccines need to be imparted

among these students who are going to be the future healthcare professionals of our nation.

**Conflict of Interest**

The authors declare no conflict of interest.

**Table 1.** Awareness towards optional vaccinations among year 1 and year 2 MBBS students

Year of study	Not aware		Aware		P value
	n	F (%)	n	F (%)	
Year 1	39	70.9	16	29.0	0.34
Year 2	48	78.7	13	21.3	

**Table 2.** Awareness towards optional vaccinations against respiratory disorders among year 1 and year 2 MBBS students

Category	Level of Awareness		P value
	Aware	Not Aware	
Year 1	29	26	0.36
Year 2	27	34	

**Table 3.** Awareness towards optional vaccinations against gastrointestinal disorders among year 1 and year 2 MBBS students

Category	Level of Awareness		P value
	Aware	Not Aware	
Year 1	34	20	0.40
Year 2	33	27	

**Table 4.** Awareness towards optional vaccinations among male and female MBBS students

Gender	Not aware		Aware		P value
	n	F (%)	n	F (%)	
Male	30	76.9	9	23.1	0.29
Female	57	74.0	20	26.0	

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