ORIGINAL ARTICLE

Factors Associated with Knowledge, Attitude and Practices on Influenza among Boarding School Students

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ABSTRACT

Introduction: **The rapid mutation rate of influenza virus results in recurring outbreaks, affecting vulnerable age groups. Although teenagers are not a priority group for the vaccine, they are at risk of getting influenza, especially if they live in dormitories, where an outbreak could easily occur due to close proximity. This study aimed to evaluate the knowledge, attitudes and practices towards influenza vaccination among teenagers aged 13-17 from a boarding school in Negeri Sembilan, Malaysia.**

Materials and Methods: **This survey was done using an online questionnaire distributed via a Google form to randomly selected students in a boarding school. The questionnaire consisted of questions regarding knowledge, attitude and practices of influenza and vaccination.**

Results: **The 260 respondents revealed that they primarily obtained influenza information from social media and personal connections. Majority had good knowledge, while just over 50% showed good attitude and practice. There was no significant association between sociodemographic and knowledge status, but a significant relationship between attitude and gender was found.**

Conclusions: **Malaysian teenagers possess a good understanding of influenza but often confuse it with the common cold. Improved public education on influenza and infection control, particularly in congested areas, is required to reduce the rate of infection and increase vaccination uptake.**

KEY WORDS

influenza, vaccine, boarding schools, teenagers

INTRODUCTION

Influenza virus causes an acute viral respiratory tract infection that is spread from person to person. Data from the Malaysian Influenza Surveillance System from 2011 to 2016 revealed that influenza was present all year, with no discernible seasonal patterns. However, intermittent periods of greater transmission occurred from November to December, January to March, July to September, or a combination of these[1]. Influenza illness has given a significant impact to the health system. It was estimated a billion people become sick with influenza every year, with 3 to 5 million severe cases and 290 000 to 650 000 deaths[2]. The education and economical industries were also affected because many people miss work, classes and school especially during pandemic. The illness usually recover within a week, however it is a recurring pandemic owing to the nature of influenza viruses have the fastest mutation rate of any human respiratory virus. Furthermore, the vulnerable age groups can be at higher risk of complications of influenza[3].

The burden of influenza disease is best combat through vaccination. Annual influenza vaccination is strongly recommended for elderly, Hajj/Umrah pilgrims and healthcare workers[4]. In Malaysia, the vaccines although widely available, is not freely available to the public. Healthcare professionals receive free influenza vaccinations, whereas the general public must obtain the vaccine from private clinics or hospitals. Despite strong recommendations and abundant evidence that influenza vaccination is effective and safe, immunisation coverage among the general public is low. Vaccination rates for healthcare workers, the elderly, and diabetic patients were just 26.3%, 5.5%, and 6.4%, respectively[5]. Although teenagers are not a priority group for the vaccine, they are at risk of getting influenza, especially if they live in dormitories, where an outbreak could easily occur due to close proximity[6] Vaccination rates among secondary school students were observed to be low several reasons including fear of needles and vaccine safety[7]. The aim of this study was to assess Malaysian boarding school students' knowledge, attitudes, and practises about influenza vaccination. The findings could serve as a foundation for healthcare professionals to establish appropriate health education, particularly addressing influenza and preventive measures.

MATERIALS AND METHODS

Study design and methodology

This cross-sectional study involved Malaysian teenagers aged 13-17 years from a boarding school in Negeri Sembilan, Malaysia. The data was collected in September 2022 through a self-administered Google form. A universal sampling technique was employed, and both respondents and their guardians consented to participate in the questionnaire. Only consented participants were included in the study.

Sample size and sampling technique

The entire population of eligible Malaysian teenagers from the boarding school was included in the study using a universal sampling technique. Participants were included in the study if they were aged

Received on August 24, 2023 and accepted on September 14, 2023
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Table 1: General knowledge regarding Influenza

General knowledge on Influenza	Yes n (%)	No n (%)	Not sure n (%)	Correct n (%)	Incorrect n (%)
Influenza and common cold are the same disease	66 (25.4)	97 (37.3)	97 (37.3)	97 (37.3)	163 (62.7)
Influenza is a respiratory disease caused by influenza virus *	178 (68.5)	6 (2.3)	76 (29.2)	178 (68.5)	82 (31.5)
Influenza infection can cause complications including pneumonia *	156 (60.0)	11 (4.2)	93 (35.8)	156 (60.0)	104 (40.0)
Influenza is a deadly disease *	145 (55.8)	14 (5.4)	101 (38.8)	145 (55.8)	115 (44.2)
Influenza vaccination is the most effective way to prevent influenza infection *	194 (74.6)	10 (3.8)	56 (21.5)	194 (74.6)	66 (25.4)
Children, pregnant women, the elderly, and medical professionals are the priority groups to receive influenza vaccination *	195 (75.0)	9 (3.5)	56 21.5)	195 (75.0)	65 (25.0)
Influenza vaccine is included in the National Immunization Program for children	84 (32.3)	61 (23.5)	115 (44.2)	61 (23.5)	199 (76.5)
In Malaysia, we have to pay for influenza vaccine	132 (50.8)	40 (15.4)	88 (33.8)	132 (50.8)	128 (49.2)
Do you know where to get the influenza vaccine?	15 (5.8)	104 (40.0)	141 (54.2)	15 (5.8)	245 (94.2)
When is the best time to get the influenza vaccine for residents in Malaysia?	37 (14.2)	95 (36.5)	128 (49.2)	37 (14.2)	223 (85.8)
Total score, mean (SD)					**4.65 (2.05)**

* indicates yes is the answer

13-17 years and consented to participate, along with their guardians. Non-consented participants were excluded.

Instrumentation

The questionnaire comprised four sections: Section A contained questions related to sociodemographic data; Section B featured ten multiple-choice questions assessing general knowledge of influenza, with each correct answer awarded one point and incorrect or unclear responses receiving zero points. Respondents with scores above the mean were considered to have good knowledge, while those with scores equal to or below the mean were classified as having weak knowledge. Section C included six questions examining attitudes towards influenza, with a maximum score of 30. Respondents with scores above the mean were classified as having a good attitude, while those with scores equal to or below the mean were considered to have a poor attitude. Positive statements followed a five-point Likert scale, while negative statements were reverse-scored. Lastly, Section D consisted of six questions addressing influenza practices, with each correct answer receiving one point and incorrect or unclear responses receiving zero points. Respondents with scores above the mean were classified as having good practice, while those with scores equal to or below the mean were considered to have poor practice. The questionnaire was pretested and validated, ensuring its reliability and high validity.

Data analysis

Descriptive statistics, inferential statistics, and regression modelling were conducted using IBM Statistics version 26 for data analysis.

RESULTS

Demographic distributions

A total of 260 students participated in this study with mean age of 14.74 (SD 1.483). Slightly more than half (52.7%) were male, and all of them were studying at a secondary school in the southern area of Peninsular Malaysia.

Sources of influenza information

Most respondents obtained information related to influenza from social media like Facebook, Instagram and Tiktok. More than 70% of respondents received information from family, teachers or friends and radio.

Level of knowledge, attitude and practice regarding influenza

The mean (SD) score for knowledge of influenza was 4.65 (2.05), whereas the scores for attitude and practise were 21.12 (3.23) and 3.40 (1.30), respectively. The respondents' knowledge scores ranged from a minimum of zero to a maximum of ten. The maximum score for attitude was 30, while the minimum score was 6. Meanwhile the practise test had a minimum score of 0 and a maximum score of 6. About 62% have good knowledge, and slightly more than half of the respondents have good attitude (50.8%) and practice (50.8%).

Knowledge regarding influenza

The majority of respondents correctly responded to questions number 2, 3, 5, and 6 as shown in Table 1. More than 80% of respondents gave incorrect answers to the questions about where to obtain the influenza shot and when to get it.

Attitude regarding influenza

The respondents' attitude on influenza are shown in Table 2. The majority of respondents viewed influenza favourably. Notably, just about 16% of respondents belief antibiotics couldn't be used to treat the flu.

Practice regarding Influenza

The practice scores to prevent influenza is shown in Table 3. The responses were mixed of good and poor practices.

List of measures to prevent influenza

Frequent hand washing was the most commonly (77.3%) that was practiced to prevent influenza. It was followed by wearing mask (65.8%), and influenza vaccine (62.7%).

Actions to be taken if contracting influenza

More than half (54.6%) chose to get treatment from hospital when having influenza. While less than 24.2% chose to buy medicine from pharmacy, 11.9% take leftover medicine at home and 9.2% preferred not to take any treatment.

Factors associated with knowledge, attitude and practice regarding influenza

Chi-square analysis showed that there is no significant association between sociodemographic and knowledge status in terms of age between lower and upper secondary students with $p = 0.686$ and gender between male and female $p = 0.418$. Meanwhile, there was a significant relationship between attitude and gender ($p = < 0.001$ but no significant relationship between attitude score and age ($p = 0.131$). Finally, there is also no significant association seen between practice and age ($p = 0.215$) and gender ($p = 0.061$).

Table 2: Attitude regarding Influenza (N = 260)

Attitude on Influenza	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)	Mean (SD)
Influenza is a common disease that is much less dangerous than 9 COVID-1	42 (16.2)	89 (34.2)	92 (35.4)	33 (12.7)	4 (1.5)	3.51 (0.96)
Influenza infection will not cause severe economic burden *	20 (7.7)	56 (21.5)	70 (26.9)	90 (34.6)	24 (9.2)	3.16 (1.10)
Antibiotics can be used to treat influenza infections *	26 (10.0)	66 (25.4)	127 (48.8)	36 (13.8)	5 (1.9)	2.72 (0.89)
I do not think it is necessary to receive this influenza vaccine *	18 (6.9)	19 (7.3)	72 (27.7)	92 (35.4)	59 (22.7)	3.60 (1.12)
I will not accept the influenza vaccine even if it is offered for free	16(6.2)	14 (5.4)	47 (18.1)	93 (35.8)	90 (34.6)	3.87 (1.13)
Influenza vaccine is useful to prevent influenza infection	121 (46.5)	97 (37.3)	34 (13.1)	5 (1.9)	3 (1.2)	4.26 (0.84)
Total score, mean (SD)						**21.12 (3.23)**

* refer to negative statement

Table 3: Practice regarding influenza (N = 260)

Practice on Influenza	Yes n (%)	No n (%)	Not sure n (%)
Have you discussed influenza vaccination with your doctor?	30 (11.5)	159 (61.2)	71 (27.3)
Did you learn more about influenza during the COVID-19 outbreak?	138 (53.1)	122 (46.9)	0
If there was no COVID-19 outbreak, would you often wear a face mask to go out during flu season?	83 (31.9)	177 (68.1)	0
Will you take the initiative to focus on influenza-related information?	193 (74.2)	67 (25.8)	0
Will you consider receiving an influenza vaccine in the future?	199 (76.5)	8 (3.1)	53 (20.4)
If your doctor recommends an influenza vaccine for you, are you ready to receive it?	242 (93.1)	18 6.9)	0
Total score, mean (SD)			**3.40 (1.30)**

DISCUSSIONS

Influenza is not a notifiable disease in Malaysia, thus the true burden of the disease and its impact are unknown. The absence of seasonality of the virus, frequent mass travel of the general people in pilgrimages such as Hajj and Umrah, and the expectation of government financing for vaccination are all contributing factors to the spread of influenza in Malaysia[8]. In addition, those living in a crowded dormitory room with low ventilation and dampness problems had more common colds and influenza infections[9]. Between 2003 and 2005, six influenza outbreaks have been documented from west Malaysia mainly among students in residential schools. In 2003, an outbreak of acute respiratory illness caused by influenza A virus occurred among students in seven residential schools situated in the northern part of Peninsular Malaysia where1419 aged 13 to 18 years old were effected by influenza-like illness[10]. Outbreaks was also reported in dormitories amongst students and military personnel[9,11]. Prior understanding about influenza among the at risk population is critical in order to reduce its growing burden. In this survey of teenagers living in dormitory, over two-thirds of the respondents had good understanding about influenza and the vaccine. Interestingly, more than a third of the participants thought influenza was similar to the common cold. Although both illnesses affect the upper respiratory tracts, influenza also affects the lower respiratory tract, causes more severe illness, and has a greater morbidity and mortality rate than the common cold. The respondents' perplexity may be related to their lack of knowledge with the term "influenza" as it is not a commonly spoken about. Similarly, a survey of general populations in Austria, Belgium, and Croatia found that almost half of them regarded common cold and influenza as identical disorders[9,12].

In Malaysia, the influenza vaccination for public is largely optional and exclusively accessible in private clinics and hospitals. In contrast, neighbouring countries such as Thailand have long started giving free vaccinations to high risk groups[13]. Knowledge about influenza vaccine in this study was noted to be low. More than two third of respondents believed that influenza vaccine was included in the National Immunization Programme for children. More than 80% did not know where they can get influenza vaccination and which time of the year they should take the vaccine. In contrast to the west, Malaysians are less familiar with influenza and its immunisation. Influenza vaccination coverage is low among different populations in Shanghai and the common reason include worrying about the side effects, believing they did not need vaccine and lack of influenza vaccine awareness[9].

The majority of respondents viewed influenza positively. Notably, approximately 16% of respondents believe that antibiotics cannot be used to treat the flu. In other words, the majority of responders believe that antibiotics are beneficial in the treatment of influenza. Similarly, other research found a large proportion of respondents who felt antibiotics might cure influenza[14,15]. Respondents from Qatar reported that neither doctors nor pharmacists were giving adequate patient education on appropriate antibiotic use[16]. Because most respiratory infections are viral in nature, the public should be educated on the proper use of antibiotics, not to request medications, and not to purchase antibiotics without a prescription in order to limit the occurrence of antimicrobial resistance.

Respondents displayed a combination of good and bad practises towards influenza. Despite the fact that the route of transmission of influenza is nearly identical to COVID-19, respondents indicated that they learned nothing new about influenza during COVID-19. As a result, they were unable to correlate influenza preventive actions by choosing not to use masks during an influenza outbreak. Face masks have been demonstrated in studies to decrease the spread of respiratory infections such as influenza[17]. Despite the fact that it is a self-limiting sickness, adequate precautions should be made to minimise the disease's spread in overcrowded areas. To reduce morbidity, emphasis should be placed on infection control measures in closed environments such as schools with dormitories, residential training centres, hospitals and long-term care facilities.

CONCLUSIONS

According to this study, two-thirds of participants had strong understanding of influenza and its vaccine, but only half had a positive attitude and practise regarding influenza. This concerning finding among the at-risk group should be taken seriously in order to decrease influenza transmission. Participants had significant information gaps and incorrect perceptions about certain elements of influenza, resulting in unfavourable attitudes and actions.

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