University Students' Perception of Ebola Virus Disease

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Authors' contributions

This work was carried out in collaboration among all authors. Authors MSI and MZI designed the study, performed the initial statistical analyses and wrote the protocol. Authors SDK and MSI wrote the first draft of the manuscript. Authors MSI and MZI managed refined analyses. Authors SDK and MSI revised the manuscript. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Objective: The present study was conducted to appraise future healthcare providers' perceptions in medical, dental, and pharmacy students on Ebola virus disease (EVD) in university in Malaysia.
Methodology: A cross-sectional observational study was conducted between healthcare students from the medical pharmacy and dental faculties using a self-developed and pre-validated research tool. A stratified convenient sampling technique was used to calculate the sample size. SPSS version 24 was used for data analysis.
Results: A total of 273 future healthcare providers from the medical pharmacy and dental faculty participated in the current study. The medical and pharmacy student shows move appropriate perception as compared to the dental students. Gender does not have any significant impact on future health care providers on Ebola virus disease.
Conclusion: The present study concluded varied reactions from the future health care providers regarding the perception of EVD in a university in Malaysia.

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1. INTRODUCTION

Ebola virus disease (EVD) is a fatal disease with seasonal outbreaks that mainly occur in the African region [1]. EVD usually affects people and non-humans, such as monkeys, gorillas, and chimps. An infection causes it with a group of viruses within the genus *Ebolavirus* [2]. Only four subtypes of EVD are known to cause disease in people [3]. The EVD spreads to people primarily via direct contact with the blood or body fluids [4]. EVD later can spread to other people through direct contact with an infected person's body fluids or has died from this disease [5,6]. When a person touches the infected body fluids or contaminated with them, the virus gets in via cracked skin or mucous membranes in the eyes, nose, or mouth [7].

People can be infected from EVD through sexual contact with someone sick with EVD and also from those patients who had recovered from EVD [8]. EVD survivors may suffer side effects after their recoveries, such as fatigue, muscle pains, eye or vision problems, and stomach pain [9]. The symptoms belonged to EVD may occur in 2 to 21 days after interaction with the virus, with an average of 8-10 days [10]. The illness's progression typically starts from symptoms such as fever, pains, and fatigue and then progresses to symptoms such as diarrhea and vomiting as the person becomes sicker [11].

Health care providers are believed as the most trusted source of information on Ebola-related issues for the general population [12]. The health care students should always have proper and appropriate perceptions regarding EVD and the recommendations to treat this virus in the general population [13,14]. As future health care providers, health care students have to be aware of epidemics occurring worldwide. They must gain adequate perception to control any outbreaks in the upcoming future as well.

The present study was conducted to appraise future healthcare providers' perceptions in medical, dental, and pharmacy students on Ebola virus disease in a university in Malaysia.

2. METHODOLOGY

A cross-sectional observational study was conducted among healthcare students from the medical, pharmacy and dental faculties using a self-developed and pre-validated research tool. A stratified convenient sampling technique was used to calculate the sample size requirement for the current study. This sampling technique targeted a total of 310 students from medical, dental, and pharmacy faculties. The study protocol regarding the data's privacy was closely followed, and the data were used to complete the research objectives only. The study participants were asked to understand and carefully choose the right answer based on their best perception. The response of participants was recorded as correct yes and no answers. The obtained scores were interpreted as a percentage to ease the data presentation.

Data analyses and presentations were carried out using Statistical Package for Social Science (SPSS) version 24.0. Frequencies with percentages were calculated for the categorical variables. The Pearson Chi-Square/ Fisher's Exact Test was used to find out the p-value in variables. A p-value of < 0.05 was considered statistically significant. The Effect size was measured using Partial Eta Squared (η^2). According to Cohen's classification of effect size, if $0.01 \leq \eta2 \leq 0.06$ = small, if $0.06 \leq \eta2 \leq 0.14$ = medium, $\eta2 \geq 0.14$ = large.

3. RESULTS

A total of 273 future healthcare providers from medical, pharmacy and dental faculties participated in the current study. The demographic variables are presented in Fig. 1.

The individual responses against each perception question statement are presented in the following tables.

3.1 Question 1: In My Opinion, EVD can Easily be Transmitted by Touching or Close Contact with Infected Individuals

A statistically significant and weak positive relationship was observed between the response of perception question 1 with faculty (p=0.006, φ=0.013) and year of study variables (p=0.044, φ=0.009). The pharmacy student shows move appropriate perception as compared to the others, as shown in the Table 1.
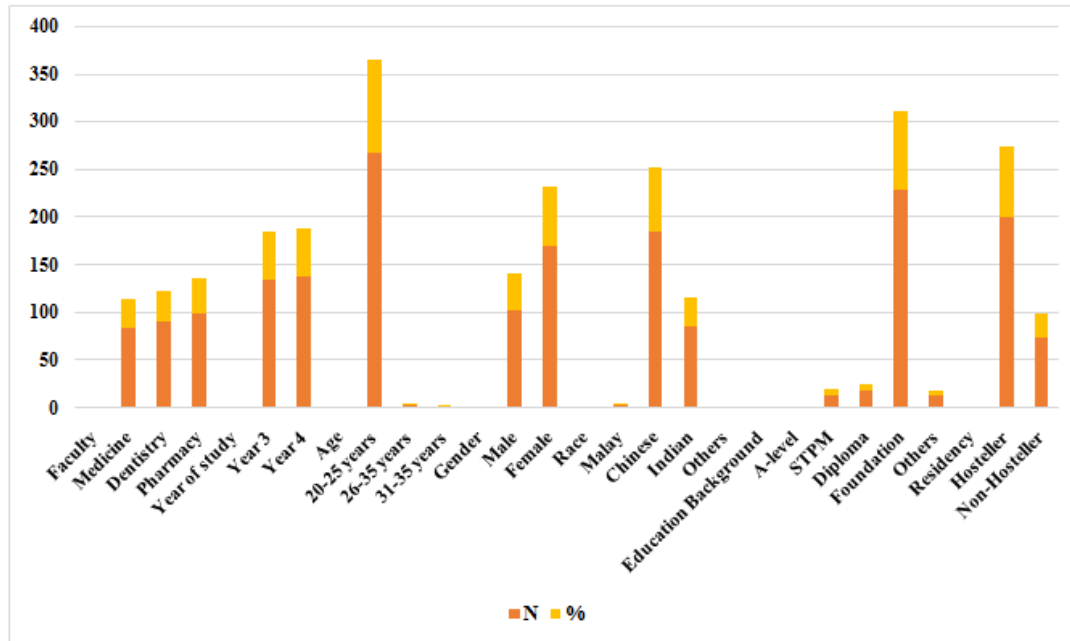
Fig. 1. Demographic information of students (N=273)

Table 1. Perception of question 1 N(%)

Variable	No	Yes	P-value	Effect size
Faculty			0.009	0.013
Medicine	60(71.4)	24(28.6)		
Dentistry	70(78.7)	20(22.2)		
Pharmacy	56(56.6)	43(43.3)		
Year of study			0.044	0.009
Pre-final year	103(76.3)	32(23.7)		
Final year	83(60.1)	55(39.9)		
Age			0.871	-
20-25 years	181(67.8)	86(32.2)		
26-35 years	4(100.0)	-		
31-35 years	1(50.0)	1(50.0)		
Gender			0.541	-
Male	69(67.0)	34(33.0)		
Female	117(68.8)	53(31.2)		
Race			0.439	-
Malay	3(100.0)	-		
Chinese	126(68.5)	58(31.5)		
Indian	56(65.9)	29(34.1)		
Others	1(100.0)	-		
Education Background			0.054	-
A-level	-	-		
STPM	7(50.0)	7(50.0)		
Diploma	11(61.1)	7(38.9)		
Foundation	156(68.4)	72(31.6)		
Others	12(92.3)	1(7.7)		
Residency			0.127	-
Hosteller	135(67.5)	65(32.5)		
Non-Hosteller	51(69.9)	22(30.1)		

3.2 Question 2: I Believe that AIDS is One of the Major Cause of EVD

A statistically significant and weak positive association was observed between the response of perception question 2 with faculty (p=0.032, φ=0.006) and education background variables (p=0.006, φ=0.016). The wrong answers were more from the dental faculty students, as shown in the Table 2.

3.3 Question 3: In My Perception, Vaccine is Available for Prevention of EVD

A statistically significant difference and weak positive association were observed between the response of perception question 3 with gender (p=0.031, φ=0.009) and residence variables (p=0.020, φ=0.009). A statistically significant and stronger positive association was observed with the faculty variable (p<0.001, φ=0.154). The wrong answers were more from the medical students, as shown in the Table 3.

3.4 Question 4: I Believe that a Direct Pharmacological Treatment is also Available to Treat EVD Patients

A statistically significant difference and weak positive association were observed between the response of perception question 4 with faculty variable (p=0.027, φ=0.006). The final year students had better perception as compared to pre-final year students, as shown in the Table 4.

3.5 Question 5: I Favor Travel Restrictions across Countries to Avoid EVD Outbreaks

A statistically significant and weak positive association was observed between the response of perception question 1 with the year of study (p=0.003, φ=0.133) moderate positive association with residence variables (p=0.026, φ=0.032). A statistically significant stronger positive association was observed with the faculty variable (p<0.001, φ=0.231). The wrong answers were more from the faculty of pharmacy students, as shown in the Table 5.

Table 2. Perception of question 2 N(%)

Variable	No	Yes	P-value	Effect size
Faculty			0.032	0.006
Medicine	30(35.7)	54(64.3)		
Dentistry	40(44.4)	50(55.6)		
Pharmacy	30(30.3)	69(69.7)		
Year of study			0.056	-
Pre-final year	52(38.5)	83(61.5)		
Final year	48(34.8)	90(65.2)		
Age			0.265	-
20-25 years	99(37.1)	168(62.9)		
26-35 years	1(25.0)	3(75.0)		
31-35 years	-	2(100.0)		
Gender			0.649	-
Male	38(36.9)	65(63.1)		
Female	62(36.5)	108(63.5)		
Race			0.439	-
Malay	2(66.7)	1(33.3)		
Chinese	72(39.1)	112(60.9)		
Indian	25(29.4)	60(70.6)		
Others	1(100.0)	-		
Education Background			0.006	0.016
A-level	-	-		
STPM	4(28.6)	10(71.4)		
Diploma	6(33.3)	12(66.7)		
Foundation	87(38.2)	141(61.8)		
Others	3(23.1)	10(76.9)		
Residency			0.184	-
Hosteller	72(36.0)	128(64.0)		
Non-Hosteller	28(38.4)	45(61.6)		

Table 3. Perception of question 3 N(%)

Variable	No	Yes	P-value	Effect size
Faculty			<0.001	0.154
Medicine	50(59.5)	34(40.5)		
Dentistry	43(47.8)	47(52.2)		
Pharmacy	49(49.5)	50(50.5)		
Year of study			0.974	-
Pre-final year	69(51.1)	66(48.9)		
Final year	73(52.9)	65(47.1)		
Age			0.922	-
20-25 years	138(51.7)	129(48.3)		
26-35 years	3(75.0)	1(25.0)		
31-35 years	1(50.0)	1(50.0)		
Gender			0.031	0.009
Male	59(57.3)	44(42.7)		
Female	83(48.8)	87(51.2)		
Race			0.741	-
Malay	1(33.3)	2(66.7)		
Chinese	94(51.1)	90(48.9)		
Indian	47(55.3)	38(44.7)		
Others	-	1(100.0)		
Education Background			0.065	-
A-level	-	-		
STPM	8(57.1)	6(42.9)		
Diploma	9(50.0)	9(50.0)		
Foundation	120(52.6)	108(47.4)		
Others	5(38.5)	8(61.5)		
Residency			0.020	0.023
Hosteller	100(50.0)	100(50.0)		
Non-Hosteller	42(57.5)	31(42.5)		

4. DISCUSSION

The current study was novel in evaluating healthcare students' perception of EVD in any medical university in Malaysia. According to the present study findings, a statistically significant and weak positive relationship was observed between the response to perception question about the opinion on EVD that it can be transmitted by touching or close contact with infected individuals with faculty (p=0.006, φ=0.013) and year of study variables (p=0.044, φ=0.009). The pharmacy students showed more appropriate perception as compared to the others. A possible reason behind this could be that pharmacy students' may have a positive attitude regarding diseases and their treatment. This justification was strongly supported by a study conducted in Malaysia, according to which the pharmacy student has a more positive attitude towards the disease and its management [15].

The present study reported that a statistically significant but weak positive association was observed between the perception of the belief that AIDS is one of the primary causes for EVD with faculty (p=0.032, φ=0.006) and education background variables (p=0.006, φ=0.016). The wrong answers were more from dental faculty students. The reason behind this could be that the curriculum of dental students, may not cover such pandemic diseases, which ultimately resulted in less perception than the rest. This justification and the results were supported by a study conducted by Iqbal and co-researchers in 2020 [16].

A statistically significant difference and weak positive association were observed between the response of perception regarding the statement of vaccine are available for prevention of EVD with gender (p=0.031, φ=0.009) and residence variables (p=0.020, φ=0.009). A statistically significant and more substantial positive association was observed with the faculty variable (p<0.001, φ=0.154). The wrong answers were more from medical students. Furthermore, the current study reported that a statistically significant difference and weak positive

association were observed between the response to the perception question. They believe that a direct pharmacological treatment is also available to treat EVD patients. with a faculty variable (p=0.027, φ=0.006). The final year students had better perception as compared to pre-final year students. These study results are also in line with the study conducted in Nigeria [17].

The current study's findings also reported that a statistically significant and weak positive association was observed between the response to perception question about favoring travel restrictions across countries to avoid EVD outbreaks with the study year (p=0.003, φ=0.133) moderate positive association with residence variables (p=0.026, φ=0.032). A statistically significant large positive association was

observed with the faculty variable (p<0.001, φ=0.231). The wrong answers were more from the faculty of pharmacy students. The reason behind this could be that the less appropriate knowledge of pharmacy students regarding the disease pandemic and epidemiology [18-20].

It is of utmost importance for healthcare students, being future healthcare providers, to obtain prime medical education which could enable them to better understand drug-disease awareness and disease management [21-23]. Advanced healthcare models, better drug-disease knowledge, and evidence-based practices are crucial for them in order to treat several infectious diseases which could further help in improving patients' health-related quality of life [24-26].

Table 4. Perception of question 4 N(%)

Variable	No	Yes	P-value	Effect size
Faculty			0.054	-
Medicine	46(54.8)	38(45.2)		
Dentistry	47(52.2)	43(47.8)		
Pharmacy	56(56.6)	43(43.4)		
Year of study			0.027	0.006
Pre-final year	79(58.5)	56(41.5)		
Final year	70(50.7)	68(49.3)		
Age			0.561	-
20-25 years	144(53.9)	123(46.1)		
26-35 years	4(100.0)	-		
31-35 years	1(50.0)	1(50.0)		
Gender			0.541	-
Male	54(52.4)	49(47.6)		
Female	94(55.9)	75(44.1)		
Race			0.658	-
Malay	2(66.7)	1(33.3)		
Chinese	97(52.7)	87(47.3)		
Indian	50(58.8)	35(41.2)		
Others	-	1(100.0)		
Education Background			0.086	-
A-level	-	-		
STPM	8(57.1)	6(43.9)		
Diploma	11(61.1)	7(48.9)		
Foundation	123(53.9)	105(46.1)		
Others	7(53.8)	6(46.2)		
Residency			0.325	-
Hosteller	111(55.5)	89(44.5)		
Non-Hosteller	38(52.1)	35(47.9)		

Table 5. Perception of question 5 N(%)

Variable	No	Yes	P-value	Effect size
Faculty			<0.001	0.231
Medicine	26(31.0)	58(69.0)		
Dentistry	29(32.2)	61(67.8)		
Pharmacy	62(52.5)	47(47.5)		
Year of study			0.003	0.133
Pre-final year	57(42.2)	78(57.8)		
Final year	50(36.3)	88(63.8)		
Age			0.751	-
20-25 years	105(39.5)	162(60.7)		
26-35 years	1(25.0)	3(5.0)		
31-35 years	1(50.0)	1(50.0)		
Gender			0.758	-
Male	42(40.8)	61(59.2)		
Female	65(38.2)	105(61.8)		
Race			0.630	-
Malay	2(66.7)	1(33.3)		
Chinese	74(40.2)	110(59.2)		
Indian	31(36.5)	54(63.5)		
Others	-	1(100.0)		
Education Background			0.347	-
A-level	-	-		
STPM	6(42.9)	8(57.1)		
Diploma	8(44.4)	10(55.6)		
Foundation	85(37.3)	143(62.7)		
Others	8(61.5)	5(38.5)		
Residency			0.026	0.032
Hosteller	81(40.5)	119(59.5)		
Non-Hosteller	26(35.6)	47(64.4)		

5. CONCLUSION

The present study concluded varied responses from the future health care providers regarding the perception of EVD. Medical and pharmacy students had a more appropriate perception as compared to the dental students regarding EVD. Gender did not have any significant effect on the perception of EVD among future health care providers.

CONSENT

The informed consent form was signed by those students who wanted to participate in the current study.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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