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The Knowledge, Attitude and Practices of COVID-19: A Survey Among Medical Students in the East Coast of Peninsular Malaysia Public Medical Schools

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ABSTRACT

COVID-19 has affected university medical students, resulting in the new norm of learning and practice. Understanding these students' knowledge, attitude and their practice would be essential as they would serve as the future doctor in Malaysia. The study attempted to evaluate medical students' knowledge, attitude and practice (KAP) in the east coast states of Peninsular Malaysia. An online and multi centre cross-sectional study was undertaken among all the three public medical schools in the east coast region of Peninsular Malaysia, between 8th July to 21st July 2020. The questionnaire consisted of sociodemographic data and the three domains which included COVID-19 KAP. Students were invited to participate via social media platform such as WhatsApp and students' email. A total of 1,008 medical students voluntarily participated in the study with female to male ratio of 2.6:1. A total of 356 (35.3%) of the medical students had satisfactory knowledge score, with 75% of them were female. The majority of the students had positive attitude towards COVID-19 and practiced meticulous social distancing during the pandemic. We noted that seniority influenced knowledge score, and this was evident as 264 (26.2%) of the students were in their clinical year. Overall, the knowledge scores regarding COVID-19 among the medical students in East Coast of Peninsular Malaysia was reasonable and there were opportunities to augment these standards. Meticulous plans are needed to enhance knowledge and preparedness of the current crops of medical students to be competent future frontliner for Malaysia.

Keywords: COVID-19, Knowledge, Attitude, Practice, Medical students

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INTRODUCTION

The gravity of COVID-19 reverberates across almost all aspect of human life. With global score records over 150 million cases and approaching 3.5 million fatalities at the time of writing (1), Malaysia contributed a total of 5,434 deaths with over 770,000 total cases (2). The declaration of this new pandemic by the World's Health Organization (3), on 11 March 2020 was followed by a quick expansion to over 213 countries within the next few months (4), sending billions of people into lockdowns as health authorities were struggling to cope.

In response, authorities across the world are investing a massive amount of resources on public health policies and promotions to curb the disease. The Malaysian government has announced strict border controls, various lockdown policies, and closure of non-essential businesses during the first wave of the outbreak. Sporadic clusters conjured a potential rise of a “super-spreader”, associated with more mutated strains which have a higher degree of infectivity (5). The combined volume of confirmed cases from evolving clusters continues to be a threat for rising incidence rates in the Peninsular Malaysia (6–7). This resulted in the closure of academic institutions, impacting medical training especially to those who rely on patients' exposure for clinical competency. Medical students are most affected by this situation.

The impact of pandemic has driven academic research to address the gap between knowledge, attitude and practices (KAP) related to COVID-19 among various segments of the society. The earliest study revealed most participants scored over 80% for correct knowledge, positive attitude, proper practice of physical distancing and handwashing (8). Comparable findings were reported in an earlier study by Zhong et al. which showed an average of 90% of correct response for knowledge were recorded; with being male, single, education at degree level or lower, unemployed, and status as

a student were found to be significantly associated with lower level of knowledge on COVID-19 (9). Another study among 327 healthcare workers in Vietnam reported about two-thirds of the participants; considering more than 95% of them were physicians, nurses and pharmacists; were able to respond correctly on questions regarding the mode of transmission, the isolation period and treatment of COVID-19 (10).

Due to the fluctuation of cases, Malaysia has entered various stages, from restriction of movement to the relaxing of economic activities (11). Undergraduate medical training requires experiential learning which relies on patients' contact and clinical examination. This has put a unique challenge in addressing the educational needs whilst trying to minimise the risk of COVID-19 transmission. This gap has resulted in the ambiguity surrounding the preparedness and literacy on the threat of the disease among the medical students.

The aim of this study is to evaluate the level of KAP among medical students in the three leading public universities in the East Coast of Peninsular Malaysia and the significant association between the sociodemographic factors. It is hoped that this study will illuminate the medical students' readiness in becoming the frontliner in combatting the world's sternest pandemic.

METHODS

Study Design

This is a multi-site cross-sectional study conducted in three public medical schools located in the East Coast of Peninsular Malaysia; International Islamic University of Malaysia (IIUM) which is located in the state of Pahang, Universiti Sains Malaysia (USM) which has a medical school in the state of Kelantan and Universiti Sultan Zainal Abidin (UniSZA) which is based in the state of Terengganu. The questionnaire

was adapted from Zhong et al. (9), covering the sociodemographic profiles as well as specific questions on KAP among the medical students during COVID-19 pandemic. Online Google Forms was used due to its industry-grade security, familiarity and ease of use (12). The period of recruitment was within two weeks of July (8th to 21st), 2020.

Sample Size Estimation

Sample size is determined based on comparing two population means proportion from Zhong et al. (9), which are the mean total knowledge score of both male (10.5 ± 2.0) and female (10.9 ± 1.3). With 95% confidence level and 80% power to detect the true difference and adjusting for 20% attrition rate, the minimum sample size estimated was 700 respondents. Universal sampling method was used to obtain the sample number.

Eligibility and Recruitment

Inclusion criteria include the age of the students over 18 years and voluntarily agreed to participate via signed consent form. Eligible undergraduate medical students from IIUM (690 students), USM (689 students) and UniSZA (315 students) were invited via the WhatsApp group messages (13), and the official email among the groups of medical students. Weblink to the Google Forms was attached with the information detailing the consent, research procedure and justifications of the study.

Study Instrument

Participants' knowledge was assessed using the 11 item questions which included seven questions on clinical characteristics on COVID-19 characteristics, two questions on disease transmission and one on prevention. Participants answer, "yes," "no," or "don't know." In the knowledge scores, one point was given to each correct question, and an aggregate score was calculated (range

0–6), with higher scores indicating more knowledge about COVID-19. In this study, we decided that satisfactory knowledge for a medical student was based on all correct answers due to the medical background of the participants.

Attitudes related to COVID-19 were examined using the perceived risk of COVID-19 infection (two items) which covered the agreement on the final control of COVID-19 and the confidence in battling against COVID-19.

The assessment of participants' practices was also conducted using two questions related to going to crowded places and wearing face masks. Participants answer with a "yes" or "no". Both attitude and practices were reported as descriptive only. A pilot study was performed among ten undergraduate medical students from a private medical college; the aim was to ascertain the face validity and reliability of the questionnaires in the Malaysian context.

Face Validity

Based on face validity index calculation as outlined by Yusoff (14), the scale face validity index (S-FVI) was 0.978, and item-level face validity index (I-FVI) of equal or more than 0.8 for all items. This questionnaire attained acceptable face validity.

Reliability

The pilot study also measured the reliability of all 15 items on sociodemographic profiles (SDP), 12 items on knowledge (K), 3 items on attitude (A) and 3 items on practice (P). The final accepted items for this study include 17 (SDP), 11 (K), 2 (A) and 2 (P). Cronbach's alpha coefficient of the knowledge questionnaire was 0.71 for this pilot study, indicating acceptable internal consistency. The final version of the questionnaires is outlined in the Table 1.

Table 1: Distribution of answers for KAP of COVID-19

Questions	Response	Preclinical students (N = 284) n (%)	Clinical students (N = 724) n (%)
Knowledge			
1. The main clinical symptoms of COVID-19 are fever, fatigue, dry cough and body aches	True	234 (82.4)	613 (84.7)
	False	34 (12.0)	80 (11.0)
	Unsure	16 (5.6)	31 (4.3)
2. Unlike the common cold, blocked nose, runny nose and sneezing are less common in persons infected with the COVID-19 virus	True	177 (62.3)	444 (61.3)
	False	53 (18.7)	171 (23.6)
	Unsure	54 (19.0)	109 (15.1)
3. Currently, no effective treatment for COVID-19, but early symptomatic and supportive treatment can help most patients recover from the infection	True	274 (96.5)	700 (96.7)
	False	4 (1.4)	7 (1.0)
	Unsure	6 (2.1)	17 (2.3)
4. Persons who are elder, obese and have chronic illnesses are more likely to develop severe complications from COVID-19	True	277 (97.5)	718 (99.2)
	False	2 (0.7)	5 (0.7)
	Unsure	5 (1.8)	1 (0.1)
5. The COVID-19 virus spreads via respiratory droplets of infected individuals	True	272 (95.8)	693 (95.7)
	False	5 (1.8)	23 (3.2)
	Unsure	7 (2.5)	8 (1.1)
6. Persons with COVID-19 cannot infect the virus to others when a fever is not present	True	1 (0.4)	14 (1.9)
	False	246 (86.6)	652 (90.1)
	Unsure	37 (13.0)	58 (8.0)
7. General population can wear general facemasks to prevent the infection by the COVID-19 virus	True	238 (83.8)	589 (81.4)
	False	27 (9.5)	94 (13.0)
	Unsure	19 (6.7)	41 (5.7)
8. It is not necessary for children and young adults to take measures to prevent the infection by the COVID-19 virus	True	3 (1.1)	22 (3.0)
	False	277 (97.5)	695 (96.0)
	Unsure	4 (1.4)	7 (1.0)
9. To prevent the infection by COVID-19, individuals should avoid going to crowded places such as train stations, wedding events and avoid taking public transportations	True	282 (99.3)	721 (99.6)
	False	2 (0.7)	3 (0.4)
	Unsure	0	0
10. Isolation and treatment of people who are infected with the COVID-19 virus are effective ways to reduce the spread of the virus	True	281 (98.9)	721 (99.6)
	False	1 (0.4)	3 (0.4)
	Unsure	2 (0.7)	0
11. People who have contact with someone infected with the COVID-19 virus should be immediately isolated in a proper place. In general, the isolation period is 14 days	True	282 (99.3)	719 (99.3)
	False	0	3 (0.4)
	Unsure	2 (0.7)	2 (0.3)

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Table 1: (continued)

Questions	Response	Preclinical students (N = 284) n (%)	Clinical students (N = 724) n (%)
Attitude			
1. Do you agree that COVID-19 will finally be successfully controlled?	Agree	241 (84.9)	631 (87.2)
	Disagree	10 (3.5)	29 (4.0)
	Unsure	3 (11.6)	64 (8.8)
2. Do you have confidence that Malaysia can win the battle against the COVID-19 virus?	Agree	274 (96.5)	698 (96.4)
	Disagree	2 (0.7)	2 (0.3)
	Unsure	8 (2.8)	24 (3.3)
Practice			
1. During the commencement of MCO through CMCO and RMCO, did you avoid going to crowded places such as weddings or markets?	Yes	272 (95.8)	693 (95.7)
	No	12 (4.2)	31 (4.3)
2. During the commencement of MCO through CMCO and RMCO, did you buy or ensure hand sanitizer/alcohol wipes/handwash soap available at all time?	Yes	268 (94.4)	662 (91.4)
	No	16 (5.6)	62 (8.6)

Notes: MCO = Movement control order; CMCO = Conditional movement control order; RMCO = Recovery movement control order

Statistical Analysis

Data were analysed using IBM SPSS version 23. Descriptive statistics were used to summarise the sociodemographic characteristics of the subjects. Numerical data is presented as mean with standard deviation (SD), or median with interquartile range (IQR) and categorical data is presented as frequency (percentage). The Chi-square test and Fisher's exact test were used to investigate the level of association among categorical variables. Independent sample *t*-test was used to compare means for two groups. Multivariable logistic regression was employed using the demographic data as independent variables and to knowledge score as the outcome variable to identify factors associated with knowledge. *P*-value of less than 0.05 is considered as statistically significant.

RESULTS

Distribution of Answers for KAP of COVID-19

A total of 1,008 medical students participated in the study. There were 1,694 students across the three medical schools at the time of study and the response rate was 59.4%.

Table 1 showed the distribution of answers for KAP of COVID-19 among the participating medical students. The majority of students (96.7%) were aware that currently there are no effective treatment available for COVID-19 and it spread via respiratory droplets of the infected individuals. Most medical students (>99%) knew that to prevent COVID-19 transmission, measurement of physical

distancing such as avoiding crowded places for example bus/train stations and wedding events were crucial. Nearly all (99.3%) medical students knew that people who are in close contact with COVID-19 virus infected individuals should be promptly isolated in a proper place for a period of 14 days.

Demographic and Socioeconomic Profiles in Relation to Knowledge

The mean age was 22.6 years (SD = 0.1) where 727 (72.1%) were female. There were 848 (84.1%) from Malay ethnicity, 724 (71.8%) were in clinical years (Year 3, Year 4 or Year 5 of study) and 860 (85.3%) considered themselves having good Internet access. Other socioeconomic profiles are detailed in Table 2. The household income was categorised into three groups of bottom 40% (B40: earning less than RM4,360/month), middle 40% (M40: earning between RM4,360 to RM9,619) and top 20% (T20: earning more than RM9,619),

according to the Household Income and Basic Amenities survey of 2016.

A total of 11 questions were asked to evaluate the knowledge on COVID-19. The satisfactory knowledge score is when all questions in the knowledge dimension were answered correctly. Table 2 shows that 356 (35.3%) of the medical students had satisfactory knowledge score and most of them were female. Year 3 medical students were better in the knowledge score but the overall overview of knowledge score across the years were unsatisfactory. More than half of the medical students (553, 54.8%) had good Internet access but scored unsatisfactorily on COVID-19 knowledge. Medical students who stayed at home during the period of the movement restriction scored poorly in knowledge twice than those who had satisfactory score. Medical students with parental household income B40 relatively had a better portion of satisfactory knowledge score as compared to the M40 and the T20 groups but was not statistically significant.

Table 2: Association between demographic and socioeconomic characteristics and knowledge score

Factor		Knowledge ^a		p-value
		Unsatisfactory	Satisfactory	
		n (%)	n (%)	
Total score		652 (64.7)	356 (35.3)	Not applicable
Age (years) ^b		22.6 (1.7)	22.7 (1.5)	0.15 ^c
Gender	Male	193 (29.6)	88 (24.7)	0.10 ^d
	Female	459 (70.4)	268 (75.3)	–
Year of study	Year 1	93 (14.3)	31 (8.7)	0.01 ^d
	Year 2	99 (15.2)	61 (17.1)	
	Year 3	219 (33.6)	107 (30.0)	
	Year 4	119 (18.3)	91 (25.5)	
	Year 5	121 (18.6)	67 (18.7)	
Race	Malay	549 (84.2)	299 (84.0)	0.45 ^d
	Foreigner	9 (1.4)	2 (0.6)	
	Non-Malay	94 (14.4)	55 (15.4)	

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Table 2: (continued)

Factor		Knowledge ^a		p-value
		Unsatisfactory	Satisfactory	
		n (%)	n (%)	
Place of stay during MCO	Hometown only	638 (97.9)	340 (95.5)	0.04 ^{*e}
	Campus only	13 (2.0)	12 (3.4)	
	Both	1 (0.2)	4 (1.1)	
Network accessibility	Good	553 (54.8)	307 (86.2)	0.54 ^d
	Poor	99 (15.2)	49 (13.8)	
Part-time job	No	597 (91.7)	329 (92.9)	0.49 ^d
	Yes	54 (8.3)	25 (7.1)	
Study financial status	Loan	177 (27.1)	92 (25.8)	0.79 ^d
	Self-funded	105 (16.1)	54 (15.2)	
	Sponsored	370 (56.7)	210 (59.0)	
Parental household income	B40	215 (33.0)	139 (39.0)	0.12 ^d
	M40	274 (42.0)	130 (36.5)	
	T20	163 (25.0)	87 (24.4)	
Marital status	Single	643 (98.8)	351 (98.6)	0.49 ^e
	Married	7 (1.1)	3 (0.8)	
	Others	1 (0.2)	2 (0.6)	
Hours of self-directed learning	Less 5 hours/week	241 (37.0)	124 (34.9)	0.28 ^d
	5–15hours/week	333 (51.1)	176 (49.6)	
	>15hours/week	78 (12.0)	55 (15.5)	

Notes: ^aSatisfactory knowledge is when all questions answered correctly, ^bMean (SD), ^cIndependent sample t-test, ^dChi-square test, ^eFisher's exact test, ^{*}Significant at $p < 0.05$

Medical students were asked two questions in the assessment of attitude on COVID-19 control and winning the battle against COVID-19. From Table 3, the two factors that were significant in assessing attitude towards COVID-19 control are race and marital status. The non-Malays and married medical students tended to be pessimistic in the country's ability to control COVID-19 spread. In addition, married medical students were more than 36 times likely to

disagree on the country's chances in winning the battle against COVID-19.

The assessment of practices among the medical students were measured using two questions exploring on avoiding crowded places and ensuring the availability of hand hygiene equipment.

Table 3: Multivariable analysis on predictor of attitude towards disagreeing to COVID-19 control and winning the COVID-19 battle

Factors	Disagreeing to COVID-19 control ^a			Disagreeing to winning the COVID-19 battle ^b		
	Adjusted odds ratio	95% confidence interval	p-value	Odds ratio	95% confidence interval	p-value
Marital status						
Others	9.4	1.4–63.6	0.02*	–	–	–
Married	3.7	0.46–30.6	0.22	36.7	3.5–387.3	0.003*
Single	1	–	–	1	–	–
Internet access						
Poor	0.47	0.1–1.5	0.21	–	–	–
Good	1	–	–	–	–	–

Notes: ^aMultivariable logistic regression used to construct the final multifactorial model by using the backward stepwise procedure, entering variables with significance levels of $p < 0.05$ into the model; covariables included in the beginning full model as follows: age, gender, race, year of study, marital status, financial status and parental income, network accessibility and part time job. ^bOnly marital status significant in simple logistic regression (married vs single, as all other category were believed in winning the COVID-19 battle).

*Significant at $p < 0.05$

Table 4 shows that married medical students appeared to be more likely to go to crowded places. The non-Malay and female medical students, tended to avoid crowding. Whereas, non-Malaysians or foreign medical students were not aware of the availability

of hand hygiene equipment. On the other hand, female and moderate-income groups of medical students were more likely to ensure the availability of hand hygiene equipment during the period of MCO.

Table 4: Multivariable analysis on predictor of practice towards going to crowded places and unavailability of hand hygiene equipment

Factors	Going to crowded places ^a			Unavailability of hand hygiene equipment ^a		
	Adjusted odds ratio	95% confidence interval	p-value	Adjusted odds ratio	95% confidence interval	p-value
Gender						
Female	0.5	0.3–0.9	0.032*	0.3	0.2–0.5	<0.001*
Male	1	–	–	1	–	–
Year of study						
Clinical	–	–	–	1.7	0.9–3.0	0.068
Preclinical	–	–	–	1	–	–

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Table 4: (continued)

Factors	Going to crowded places ^a			Unavailability of hand hygiene equipment ^a		
	Adjusted odds ratio	95% confidence interval	p-value	Adjusted odds ratio	95% confidence interval	p-value
Race						
Non-Malay	0.1	0.02–0.9	0.049*	0.9	0.5–2.1	0.995
Foreigner	1.8	0.2–13.8	0.593	5.3	1.1–24.8	0.034*
Malay	1	–	–	1	–	–
Household income						
T20	–	–	–	1.1	0.6–2.1	0.652
M40	–	–	–	0.4	0.2–0.8	0.011*
B40	–	–	–	1	–	–
Marital status						
Married	5.6	1.0–30.6	0.047*	–	–	–
Single	1	–	–	–	–	–
Part time job						
Yes	2.4	0.9–5.6	0.053	–	–	–
No	1	–	–	–	–	–
Internet access						
Poor	–	–	–	1.5	0.8–2.8	0.185
Good	–	–	–	1	–	–

Notes:^aMultivariable logistic regression used to construct the final multifactorial model by using the backward stepwise procedure, entering variables with significance levels of $p < 0.05$ into the model; covariables included in the beginning full model as follows: age, gender, race, year of study, marital status, financial status and parental income, network accessibility and part time job. *Significant at $p < 0.05$

DISCUSSION

Studies on the KAP towards COVID-19 have been studied worldwide, but our cohort investigated on specific medical student population in the east coast of Malaysia. Hypothetically, the medical students are those with the background of an outstanding knowledge, good attitude and practices attainment with distinction fundamental.

The knowledge score among the Malaysians population with regard to COVID-19 was moderate with overall satisfactory rate of

80.5% (8). We were not able to analyse the mean knowledge score due to the skewed distribution of the findings. Satisfactory score was deemed as achieved when all questions were answered correctly. This was seen in 63.5% of those in their clinical years, in contrast to 64.7% of the total medical students who had unsatisfactory score. Several studies in other Asian countries indicated high levels of COVID-19 knowledge among the general population (9) and healthcare workers (10), but accurate comparisons were not possible due to different scoring systems used.

The satisfactory knowledge score for each student batch was less than half despite more than half of them claiming to have good Internet access during the pandemic. According to Liles et al. (15), medical students who attended face-to-face classes and spent 6 to 8 hours daily for their learning were more inclined to execute better knowledge retention in class. Other study suggested that learning through Facebook could support the initiative towards educational purpose (16). Transition from the old model of face-to-face to virtual learning can be a daunting task.

Life as medical students is challenging, especially during the pandemic, due to the uncertainty of learning, interrupted education and intense fear from the outbreak and future career. Resultant from these events, more than half of the medical students experienced anxiety (17). There is a move to shift learning from face-to-face to virtual and independent learning. In this study, we found that the collective knowledge score of the medical students were lower than the expected standard. We defined satisfactory knowledge for medical students from the all correct answers from the knowledge section. This could explain why the conclusion in our study is different than the other population group. Majority of them (97%) spent their learning time at home, leaving them vulnerable to potential distractions outside campus environment during the pandemic uncertainties. The good Internet accessibility should be an advantageous factor for the students to search for COVID-19 information.

The present study found a large proportion of medical students apprehended positive attitude towards controlling and defeating COVID-19. Large number of positive attitudes were also reported in other studies as well (8). This attitude could have been attributed to effective measurement by the authority and embracing social distancing as the standard operating procedure. The non-Malays and married were at least three times to disagree on COVID-19 control. This

can be explained mainly due to the smaller sample size. Other factors for non-single group were stress and family life which could lead to negative side. The element of uncertainty during COVID-19 pandemic has significantly affected their attitude.

In addition, married students reflected their anxiety of COVID-19 control in their attitude towards winning the battle against COVID-19. This was not surprising given the reason above. Those who were married were more overprotective over their family members. They become more pessimistic and overprotective parents (18). The pessimistic attitude produced a more vigilant practice in this group.

For the practice of going to crowded places, being married appeared to be five times more likely to go to crowded places, whereas non-Malays and females were inclined to avoid such places. This is probably related to family responsibilities, as parents or spouse.

Foreign medical students were not aware of hand hygiene equipment as compared to females and moderate M40 income group. It is probable that the foreign students might not be aware of the current dissemination of information in the local Malay language.

The overall score was acceptable if the generic inference on their knowledge was made. But for some reason, the attitude varies quite considerably. This pointed towards the notion that the right knowledge might not immediately be translated into the right attitude and practice.

LIMITATIONS

The low sampling of foreign and married medical students in this study has caused widened confidence interval and would affect the findings. There are sampling bias, related to selection, information, volunteer and ascertainment, which could lead to skew distribution of the population.

The assessment using the multiple true-false format has led to very poor standard for knowledge assessment. Many educationists and psychometricians considered the multiple true false formats as an archaic format for any type of knowledge assessment (22). Using the questionnaire from Zhong et al. (9), and being critical, some questions were asked in “leading statements” which could be a typical format for the assessment.

We decided to put a high standard for knowledge score (satisfactory when all questions were answered correctly) due to the skewed distribution of the findings in COVID-19’s knowledge regard. This has led to difficult data analysis and interpretation. Even though the questionnaire was adopted from an early established study, the instrument has a degree of validity and perhaps cultural adaptation study should be initiated prior to the commencement of the study.

Other limitation includes the lack of measurement on the retained COVID-19 knowledge acquired by the medical students. There was no time limit in answering the questionnaire and was done at one point of time in July 2020. Considering these limitations, the knowledge assessment might only reflect at a short window time, instead of progressive and fluidity nature of the knowledge on COVID-19.

CONCLUSION

Despite the reasonable knowledge regarding COVID-19, the desirable standard of knowledge level by the medical students were comparable to other populations in other established studies. In view of specific study population and different scoring system, we concluded that the knowledge of COVID-19 was not influenced by the duration of the study in medicine and place of stay during MCO. The findings also suggested that despite the overall positivity of attitudes and practices in overcoming the pandemic, being married were associated to being pessimistic and tended to be less

crowd-avoidance. These findings suggest that educational restructuring during the COVID-19 may be required to allow paradigm shift in medical education including new methods of curriculum delivery (19), with pertinent assessments and engagements without deluging the burden of students and academicians. Pandemic attentiveness is essential in preparing students during the pandemic crisis.

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ETHICAL APPROVAL

Each of the institutional research ethics committee has given approval for this study – International Islamic University Malaysia (IIUM-IREC 2020-064), Universiti Sains Malaysia (USM/JEPeM/COVID19-36), and Universiti Sultan Zainal Abidin (UniSZA/UHREC/2020/179).

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