

Relationship between Depression and Suicidal Ideation among Medical Students in University Putra Malaysia

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Abstract

This study aims to investigate relationship between depression and suicidal ideation among medical students in University Putra Malaysia. 217 respondents consisted of 109 males and 108 females were selected as sample size by using purposive sampling technique. Self-administered questionnaire were being distributed for data collection. The instruments adopted in this study were PHQ-9 and BSS. Descriptive Statistical Test, Pearson's Product-Moment Correlation Test and Independent Samples T-test were integrated in data analysis. The results highlighted that nearly 84.33% of the respondents were facing depression. Meanwhile, almost 97.70% of the respondents were experiencing suicidal ideation. Females indicated to have higher propensity in depression and suicidal ideation. The findings also described that parental age, parental years of education and family monthly income did not significantly affect depression. Whereas, parental age and parental years of education did not significantly affect suicidal ideation. In addition, respondent's age established a significant relationship with depression and suicidal ideation. Besides, family monthly income and depression established a significant relationship with suicidal ideation. This study also postulated that there was significant gender difference in depression but no significant gender difference in suicidal ideation. Hence, this phenomenon outlined that depression is a potential risk factor for suicidal ideation among medical students. Overall, respondents who suffered from depression have a higher likelihood to develop suicidal ideation. It was fundamental and recommended for future researchers to generate more diverse facts, views and perspectives on similar topic.

Keywords: Depression, Family Monthly Income, Gender Difference, Medical Students, Parental Age, Parental Years Of Education, Respondent's Age, Suicidal Ideation

Introduction

Mental health is positively associated with depression, anxiety and stress among youth which will influence individual's well-being and life satisfaction. Mental health issues such as eating disorders, depression, suicide, anxiety, gambling and substance use are significant in college-aged students (Putukian, 2016). Prior research has highlighted a rising prevalence of mental

disorders and a lower quality of life among medical students as compared to students of other disciplines (Wege et al., 2016). Depression and suicidal behaviour are mental health concerns influencing a notable population of medical students.

Not to mention that the medical undergraduate students who are more prone to higher stressful period. Medical program is generally more intensive and requires a longer period to complete rather than many other courses (Gan & Hue, 2019). The academic curricula of medicine are commonly acknowledged with a higher academic load, intensive working hours, competitive environment, work-life conflict, lack of entertainment activities, isolated from home, and financial issues which in return may have a detrimental effect on students' mental health (Wege et al., 2016).

Suicidal ideation is defined as thinking about, considering or planning suicide (Klonsky et al., 2016). According to World Health Organisation (2018), approximately 800,000 people die due to suicide each year. This descriptive statistic corresponds to suicide rate of around 11.5 per 100,000 people as well as equivalent to someone dying due to suicide every 40 seconds (Lee et al., 2017). Importantly, according to WHO (2018), suicide acts as the second contributing cause of death in youth typically aged 15 to 29. The systematic review and meta-analysis of 195 studies in the Journal of the American Medical Association (JAMA) involving 129 123 medical students in 47 countries worldwide found that 11% of the medical student participants reported to have suicide ideation during their medical school (Rotenstein et al., 2016).

Dyrbye et al (2008), and Yiu (2005), proposed that medical students are vulnerable to suicidal ideation due to personal and professional distress that caused by determining factors that encompassing information overload, devoid of leisure time, financial crisis, being away from home, academic load, and work pressure. Based on findings from prior researches, individualistic culture, average socioeconomic characteristic and stigma that correlated to mental health disorders are factors that stipulated prevalence of depression in medical students (Coentre et al., 2016).

Apart from that, previous research indicated that depression is greatly related to suicidal ideation. Studies have demonstrated that the program of Medicine is a period of significant distress for medical students and the prevalence of depressive and anxiety symptoms is higher rather than others (Serra et al., 2015). The research published in JAMA also discovered that 27.2% of the 122 356 medical student participants reported having depression or depressive symptoms which is higher as compared to the general population (Rotenstein et al., 2016). Based on Time USA, medical students tend to have depression which are two or five times more likely than the general population whereby the prevalence ranged from 9-56% (Oaklander, 2016).

Figure 1 depicts the conceptual framework of this study. This study encompasses of three antecedent variables namely personal background (i.e. age, gender, race, religion and year of medical education), parental background (i.e. age, years of education and employment status) and family context (i.e. family monthly income and parental marital status), an independent variable (i.e. depression) and a dependent variable (i.e. suicidal ideation). Public awareness and concern on mental health issues as crucial topics in Malaysia were still scarce

even though various researches had indicated a greater propensity in depression and suicide among medical students. In brief, this study aimed to revise past research on depression and suicidal ideation and acknowledge the significance of study. Therefore, the study on relationship between depression and suicidal ideation among medical students in University Putra Malaysia (UPM) was being conducted.

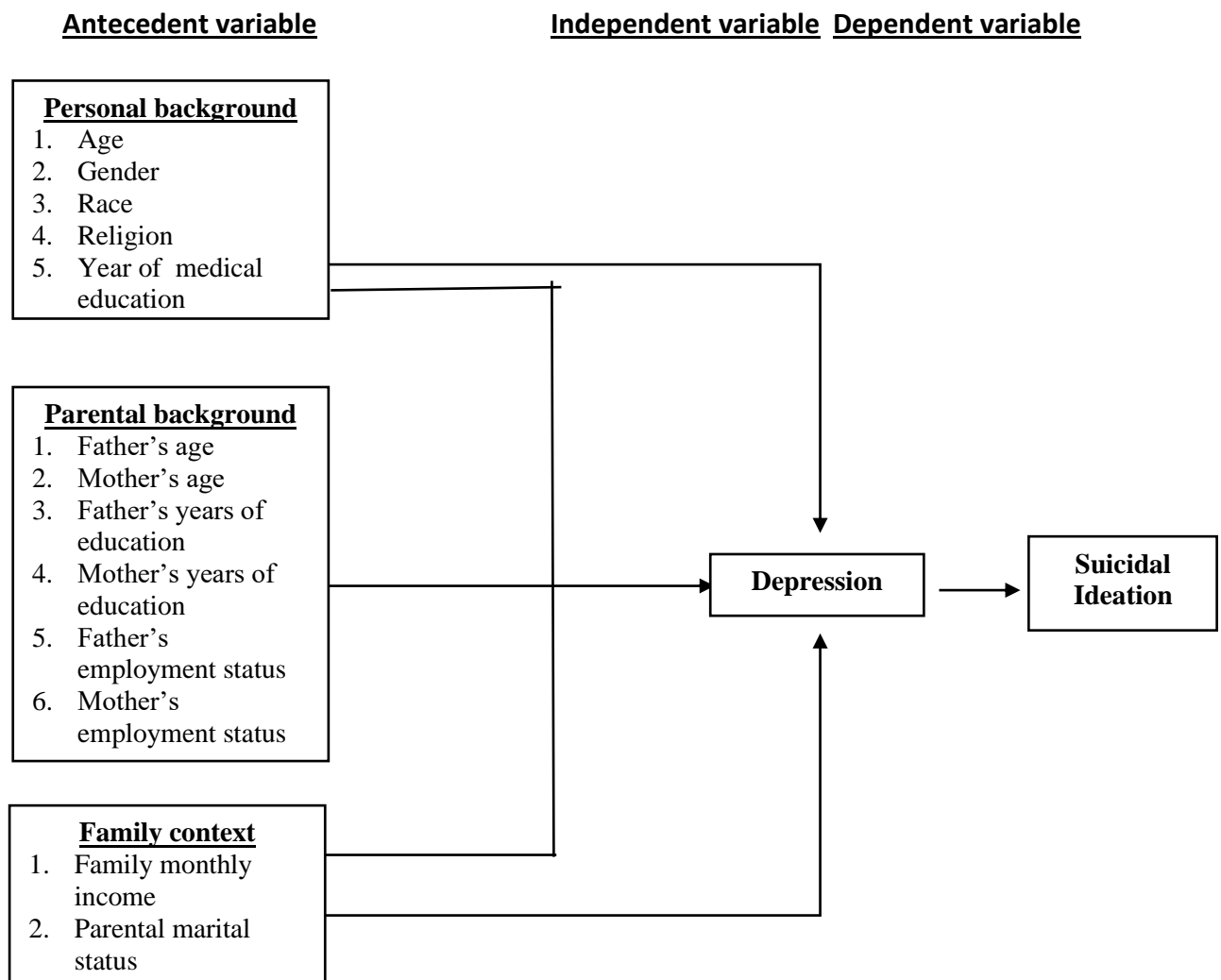


Figure 1. Conceptual Framework of the Study

Problem Statement

In Malaysia, attempting suicide is a crime and yet can be punished under Section 309 of the Penal Code. Under the section, “whoever attempts to commit suicide, and action towards the commission of such offence, shall be punished with imprisonment for a term which may extend to one year or with fine, or with both” (Aliza, 2018). However, Malaysian Psychiatric Association estimated that suicide rates in Malaysia have increased by 60% since the 1960s (The Star Online, 2018).

Most researches on suicidal ideation were based on the data mainly from population high-income countries rather than other countries from lower-income (Muhamad et al., 2017). The findings in those researches were hard to be implied to Malaysian population due to varying context, culture and lifestyle. Therefore, this study was based on the population in the

Malaysia context in order to enhance the knowledge about the local population. The most recent available statistics about suicide rate were established in 2009 by the National Suicide Registry Malaysia. Since 2009 until now, there was no such report available because of the termination of National Suicide Registry Malaysia (NSRM, Ministry of Health Malaysia, 2011). So, these findings have provided a greater interest to determine recent phenomenon of suicidal ideation among Malaysian.

According to Befriender's KL publicity director, Ardy Ayadali, research indicated that suicide is the second contributing factor of death for youth between the ages of 15 and 29 in Malaysia despite suicide was more common among older adult worldwide. He also claimed that 21% of the callers of Befrienders Kuala Lumpur were aged 21-30, 15% were aged <20, 13% were aged 31-40 as well as 36% were of unknown ages (Suzanna, 2017). Consequently, these descriptive statements gave motivation to conduct this study on suicidal ideation among youth specifically on medical students rather than older adult population.

Malaysian medical students have a higher tendency of depression because of stressful exam-oriented environment prevalent among them who perceive academic excellence as the benchmark of a sound and safe doctor (Francis et al., 2019). Research carried out by Ibrahim et al. (2014), highlighted that anxiety, stress and depression was greatly associated with suicidal ideation. Thus, these illustrative facts have provided a greater picture and interest to conduct this study on the relationship between depression and suicidal ideation among medical students.

Besides, the presence of many contradictive findings between different researches was also established. For instance, there was no significant difference in suicidal ideation between male and female medical students (Adhikari et al., 2017). Male medical students had higher suicidal ideation than females (Sun et al., 2017). Female medical students had higher suicidal ideation than males (Ahmed et al., 2016). As a result, this study was conducted to explore and fill the gap and need for research. There was limited research on the relationship between personal background, parental background and family context of respondents as well as depression with suicidal ideation. Hence, certain personal background, parental background, family context and depression was included in this study to understand how these variables may influence suicidal ideation among medical students.

Significance of Study

The findings of this study contributed to three aspects which were literature, theoretical and practical. In terms of literature, there was a need for additional studies to explore the fundamental cause-effect relationship between depression and suicidal ideation in medical students due to the high prevalence in symptoms of depression and suicide at present. Thus, this study was able to fill in the literature gap and need for depression and suicidal ideation and their relationship.

In terms of theoretical, this study was a source of up-to-date information to support theoretical framework and provide new study findings on how significantly depression led to suicidal ideation. Nonetheless, it also established an understanding and provide a conceptual framework relevant to the target population.

Practically, this current study was helpful to provide insight in accordance with the possible implications of depression and suicidal ideation. This study was valuable in providing a greater picture on relationship between depression and suicidal ideation. Furthermore, the findings and results of this study was an essential endeavour which acts a potential input or effort for universities, parents, peers, counsellors, psychiatrists, social workers and others to give standard and assistance in depression and suicidal ideation as well as the relationship between these two variables.

The results and findings of this research enabled universities to pay more concern to the awareness issues about depression and suicide among undergraduate student especially medical students. Universities could enhance mental health care services by collaborating with Ministry of Health to establish and launch programs such as workshops, seminars and campaigns to advocate the significance of mental health among students. In universities' level, the counsellor had a pivotal role in determining medical students who were suffering from mental health problems.

On top of that, the outcomes of this study enabled parents and peers to identify and understand adequately the medical undergraduate students who suffered mental health problems like depression and suicidal ideation. This study aimed to encourage the roles of parents and peers to be a good listener without neglecting their concerns on mental health issues of the medical students. By having interdisciplinary knowledge and self-assurance with them, parents and peers could implement early prevention and intervention against depression and suicidal ideation.

On the other hand, professionals such as school psychologists, psychiatrists, counsellors, social workers and human services professionals from private or government agencies was able to play an essential role in assisting medical students with mental health problems like depression and suicidal ideation to tackle and solve their problems that may hinder their overall development. The outcomes or results obtained from this research enabled such professionals was helpful to detect early signs and symptoms for depression and suicidal ideation. They could apply more eclectic knowledge, skills and value in providing policies, interventions, strategies and problem-based solutions to reduce the likelihood and trends of depression and suicidal ideation among medical students in universities.

In brief, general views, perspectives and knowledge could be generated throughout this entire study. This study was crucial in providing evidence and supports for universities, parents, peers, counsellors, psychiatrists, social workers and others in determining the significance of the prevalence of depression and suicidal ideation. Nevertheless, this study resulted in certain implications, awareness and advocacy in addressing the issue of depression and suicidal ideation among all strata of society especially among medical students. The information and results obtained further supported the findings of previous study and provide more possibilities of future research.

Research Objectives

Generally, this study aimed to investigate depression and suicidal ideation among medical students in UPM. Specifically, it aimed to: (1) describe the personal background (age, gender, race, religion and year of medical education), parental background (age, years of education

and employment status) and family context (family monthly income and parental marital status) among medical students in UPM; (2) describe depression and suicidal ideation among medical students in UPM; (3) determine the relationship between personal background (age), parental background (age and years of education) and family context (family monthly income) with depression among medical students in UPM; (4) determine the relationship between personal background (age), parental background (age and years of education) and family context (family monthly income) with suicidal ideation among medical students in UPM; (5) determine the relationship between depression and suicidal ideation among medical students in UPM; (6) compare depression among medical students in UPM between male and female; and (7) compare suicidal ideation among medical students in UPM between male and female.

Materials and Methods

Sample and Sampling Technique

The data of this study was obtained among medical students, males and females in Faculty of Medicine and Health Sciences (FMHS), University Putra Malaysia. The target population were first to fifth year medical students who pursuing Doctor of Medicine in FMHS, UPM. As reported by Official Portal of UPM – Facts and Figures (2019), there was 11,981 undergraduate students in UPM. Plus, there were 16 faculties in UPM and FMHS were selected to carry out the research. The population of medical students who were pursuing their Doctor of Medicine in UPM, Serdang was N = 512. Since the population of this study was known, the sample size representative of the medical students was 217 according to Krejcie and Morgan (1970) table. In other words, the total number of respondents (sample size) for this current research was N = 217. The sample of this study was recruited through purposive sampling. This current study accessed clearer gender proportion in selecting sample size to compare difference in variables between males and females. The stratum of this study was based on gender. As a result, this study purposively obtained an approximately same ratio of males and females. The proportion of males and females selected as sample size from each stratum was 109 male respondents (50.2%) and 108 female respondents (49.8%) respectively.

Data Collection Procedure

The English version of the sets of questionnaires was distributed online to respondents in the form of Google Form Link. The English version was selected as it is the most common language used among medical students as well as to ensure the reliability of results or findings. At first, permission to conduct research among medical students was obtained from FMHS, UPM prior to data collection. 217 medical students that admitted to FMHS, UPM from all medical year were selected by purposive sampling and data were collected.

After that, all the participants were informed regarding the research goals and signed the informed consent form during data collection. The respondents were informed that they had the right to know their current condition on suicidality and if they need further assistance based on their condition, they could consult experts such as psychiatrist, registered counsellor and public health physician. The participants who did not give consent to participate in this study were excluded. They were also guaranteed confidentiality and their rights to withdraw from the study at any time. The information and identities of the respondents were kept as private and confidential at any time. The time allocated for each respondent to accomplish the questionnaire was approximately 10 to 15 minutes. Eventually, the questionnaire were distributed to the eligible respondents.

Measures

Self-administered questionnaires were employed because it was cheaper, quicker, able to offer anonymity as well as designed exclusively to be completed by respondents without intervention of researcher in data collection. The questionnaire was divided into three sections consisted of respondents' demographic information encompassing personal background (i.e. age, gender, race, religion and year of medical education), parental background (i.e. age, years of education and employment status), family context (i.e. family monthly income and parental marital status), scale/instrument of depression and suicidal ideation of the respondents. The instruments administered included a combination of two different sets of questionnaires developed exclusively for depression and suicidal ideation. Depression was measured by using Patient Health Questionnaire-9 (PHQ-9). Suicidal ideation was measured by using Beck Scale of Suicide Ideation (BSS). In view of the original, pilot and actual study, all the Cronbach's alpha value highlighted that the measurements had good or excellent reliability. In specific, the questionnaire includes the measures as below:

Personal Background. Information regarding the personal profiles or description of the respondents. In the questionnaire provided, the respondents answered question about their ages, gender, race, religion and year of medical education.

Parental Background. Information regarding the parental profiles or description of the respondents. In the questionnaire provided, the respondents answered question like their parent's age, years of education and employment status.

Family Context. Information regarding the family profiles or description of the respondents. In the questionnaire provided, the respondents answered question such as their family monthly income and parental marital status.

Depression. Depression was measured by using PHQ-9. It consisted of 9 items where each scored on a 4 point scale value ranging from 0 (not at all) to 3 (nearly every day) based on severity of depression. The higher total scores indicated more severe depressive symptoms. Some sample items for depression are "Little interest or pleasure in doing things" and "Feeling down, depressed, or hopeless". In this current study, the Cronbach's alpha coefficient reported in PHQ-9 was .91.

Suicidal Ideation. Suicidal ideation was measured by using Beck Scale of Suicide Ideation (BSS). It consisted 21 items where each scored on a 3 point scale value ranging from 0 to 2 based on severity of suicidal ideation. The higher total scores indicated more severe suicidal ideation. Some sample items for suicidal ideation are "I have a moderate to strong desire to kill myself" and "I am sure I shall make a suicide attempt". In this current study, the Cronbach's alpha coefficient in BSS was .94.

Data Analyses

Statistical Package for Social Science (SPSS) Version 25 was utilised to analyse quantitative data in this current study. The quantitative data were analysed in univariate analysis (i.e. descriptive statistical analysis) and bivariate analysis (i.e. inferential statistical analysis). Inferential statistical analysis including Pearson's Product-Moment Correlation Test and Independent Samples T-test was administered in this study. Pearson Correlation test was

used to examine the strength of linear relationship between variables. The p-value which less than ($\alpha = 0.05$), or $p < 0.05$ reported that there was a significant relationship between two variables. The data collected were analysed on the basis of the research objectives and research hypotheses. Based on the objectives, all the antecedent and independent variables were linked to dependent variable for identifying the correlates. Besides, gender difference in independent and dependent variable also determined.

Results

Descriptive Statistical Analysis

Background Characteristic of Respondents. Table 1 reveals the descriptive statistical analysis of background characteristic of respondents. The respondent's age was between 18 to 25 years old (Mean = 20.50, S.D = 1.76). Most of the respondents were 20 years old and below with 123 (56.7%) out of 217 respondents, followed by 61 respondents (28.1%) were between 21 to 22 years old as well as 33 respondents (15.2%) were 23 years old and above. Since this study employed purposive sampling, a total number of 109 male and 108 female respondents were being recruited as the sample size. Hence, an approximate total number of male and female respondents had been identified. There were 109 male respondents (50.2%) and 108 female respondents (49.8%) who involved in this study. Furthermore, the race of respondents was dichotomised into either Malay, Chinese, Indian and others. There were 100 Malay respondents (46.1%), followed by 73 Chinese respondents (33.6%), 35 Indian respondents (16.1%) and 9 respondents (4.1%) from other races. In addition, the religion of respondents was classified into Islam, Buddhist, Christian, Hinduism and others. There were 100 Islam respondents (46.1%), 58 Buddhist respondents (26.7%), 39 Christian respondents (18.0%), 17 Hinduism respondents (7.8%) and 3 respondents (1.4%) from other religions as well. Being a medical student of UPM, the curriculum structure includes first and second year (basic medical sciences), third year (basic clinical) as well as fourth and final year (clinical) respectively. The findings reported that there were 69 respondents (31.8%) in first year, 56 respondents (25.8%) were in second year, 52 respondents (24.0%) were in third year, 24 respondents (11.1%) were in fourth year and 16 respondents (7.4%) were in fifth year respectively.

Importantly, it was clearly shown that both parents of the respondents were middle-aged or in middle adulthood. This was portrayed by the average ages of respondents' father was 54.41 (S.D = 4.28) whereas the average ages of respondents' mother was 51.45 (S.D = 3.73). Moreover, the findings had provided a greater picture that approximately 90% of the respondents' parent completed their secondary school education. This is justified by the average years of education for respondents' father were 13.40 years (S.D = 3.02) while the average years of education for respondents' mother was 13.21 years (S.D = 2.88). Nonetheless, the findings underlined that 99 of respondents' father were working in non-government sector (45.6%), followed by 74 (34.1%), 43 (19.8%) and 1 (0.5%) of respondents' father were working in/as government sector, self-employed and housemaker respectively. Besides, the results signified that 79 of respondents' mother were working as housewife (36.4%), followed by 57 (26.3%), 52 (24.0%) and 29(13.4%) of respondents' mother were working in/as non-government sector, government sector and self-employed respectively.

Interestingly, household of Malaysians was classified into three different income groups namely Top 20% (T20: \leq RM3000), Middle 40% (M40: RM3001 - 8000), and Bottom 40% (B40:

≥ RM8001). Thus, the results described that approximately half of the respondents were originated from family of M40 and the family monthly income was ranged from RM 500 to RM 16000 (Mean = RM 4580.24, S.D = 2780.87). Apart from that, most of the respondents' parental marital status was married with a total of 183 (84.3%), followed by 23 (10.6%), 9 (4.1%) and 2(0.9%) for divorced, widowed and single respectively.

Table 1

Background characteristic of respondents (N = 217)

Background characteristic	n	%	Mean	S.D	Min	Max
Personal Background :						
Age (years old)			20.50	1.76	18	25
≤ 20	123	56.7				
21 - 22	61	28.1				
≥ 23	33	15.2				
Gender						
Male	109	50.2				
Female	108	49.8				
Race						
Malay	100	46.1				
Chinese	73	33.6				
Indian	35	16.1				
Others	9	4.1				
Religion						
Islam	100	46.1				
Christian	39	18.0				
Buddhist	58	26.7				
Hinduism	17	7.8				
Others	3	1.4				
Year of Medical Education						
1 st year	69	31.8				
2 nd year	56	25.8				
3 rd year	52	24.0				
4 th year	24	11.1				
5 th year	16	7.4				
Parental Background :						
Age (years old)						
Father			54.41	4.28	46	69
46 - 53	94	43.3				
54 - 61	112	51.6				
62 – 69	11	5.1				
Mother			51.45	3.73	43	63
43 - 49	59	27.2				
50 - 56	138	63.6				
57 – 63	20	9.2				
Years of Education						
Father			13.40	3.02	0	30
≤ 10	20	9.2				

11 - 20	195	89.9				
≥ 21	2	0.9				
Mother			13.21	2.88	3	30
≤ 10	18	8.3				
11 - 20	197	90.8				
≥ 21	2	0.9				
Employment Status						
Father						
Self-employed	43	19.8				
Government sector	74	34.1				
Non-government Sector	99	45.6				
Housemaker/Housewife	1	0.5				
Mother						
Self-employed	29	13.4				
Government sector	52	24.0				
Non-government Sector	57	26.3				
Housemaker/Housewife	79	36.4				
Family Context :						
Family Monthly Income (RM)			4580.	2780.87	500	16000
≤ 3000			24			
3001 - 8000	77	35.5				
≥ 8001	118	54.4				
Parental Marital Status	22	10.1				
Married						
Divorced	183	84.3				
Single	23	10.6				
Widowed	2	0.9				
	9	4.1				

Note: S.D = Standard Deviation, Min = Minimum, Max = Maximum

Depression among Respondents. Table 2 indicates the descriptive statistical analysis of depression among respondents. The average score of respondents in PHQ-9 was 11.41 (S.D = 5.89) with maximum value of 24 and minimum value of 0. There were 61 respondents (28.11%) experiencing moderate depression, followed by 53 respondents (24.42%), 47 respondents (21.66%), 34 respondents (15.67%) and 22 respondent (10.14%) suffering from mild, moderately severe, none and severe depression respectively. Therefore, the findings had provided a greater interest to know that nearly 84.33% of the respondents were either facing mild, moderate, moderately severe and severe depression.

The average score of 109 male respondents in PHQ-9 was 10.60 (S.D = 6.06) with maximum value of 22 and minimum value of 0. Overall, there were 39 male respondents (35.78%) experiencing mild depression, followed by 21 respondents (19.27%), 20 respondents (18.35%), 19 respondents (17.43%) and 10 respondent (9.17%) suffering from moderately severe, moderate, none and severe depression respectively. The average score of 108 female respondents in PHQ-9 was 12.23 (S.D = 5.62) with maximum value of 24 and minimum value of 0. Typically, there were 42 female respondents (38.89%) suffering from moderate depression, followed by 26 respondents (24.07%) and 12 respondents (11.11%) encountering

moderately severe and severe depression respectively. Meanwhile, a same number of 14 female respondents (12.96%) each were facing none and mild depression.

In essence, female respondents (Mean = 12.23) were highlighted to have a higher tendency in depression than male respondents (Mean = 10.60). The results in ninth item of PHQ-9 represented significantly about suicidal ideation. There were 127 respondents (58.53%), 52 respondents (23.96%) and 38 respondents (17.51%) answered possessing thoughts that would be better off dead or thoughts of hurting own self in some way for not at all, several days and more than half the days respectively over the past two weeks. Importantly, no respondents claimed to have thoughts that would be better off dead or thoughts of hurting own self in some way for nearly every day over past two weeks.

Table 2

Depression among Respondents (N = 217)

Variable	n	%	Mean	S.D	Min	Max
Depression :						
(PHQ – 9) (N = 217)			11.41	5.89	0	24
None: 0-4	34	15.67				
Mild: 5-9	53	24.42				
Moderate: 10-14	61	28.11				
Moderately severe:15-19	47	21.66				
Severe: 20-27	22	10.14				
Male (N = 109)			10.60	6.06	0	22
None: 0-4	19	17.43				
Mild: 5-9	39	35.78				
Moderate: 10-14	20	18.35				
Moderately severe:15-19	21	19.27				
Severe: 20-27	10	9.17				
Female (N = 108)			12.23	5.62	0	24
None: 0-4	14	12.96				
Mild: 5-9	14	12.96				
Moderate: 10-14	42	38.89				
Moderately severe:15-19	26	24.07				
Severe: 20-27	12	11.11				
9th Item (N = 217)			0.59	0.77	0	2
<i>Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?</i>						
Not at all: 0						
Several days: 1	12	58.53				
More than half the days:2	7	23.96				
Nearly every day: 3	52	17.51				
	38	0.00				

Note: S.D = Standard Deviation, Min = Minimum, Max = Maximum

Suicidal Ideation among Respondents. Table 3 outlines the descriptive statistical analysis of suicidal ideation among respondents. The average score of respondents in BSS was 17.60 (S.D

= 9.19) with maximum value of 34 and minimum value of 0. Overall, only 5 respondents (2.30%) were absence of suicidal ideation whereas 212 respondents (97.70%) were having suicidal ideation with different severity. There were 67 respondents (30.88%) encountering low level of suicidal ideation, followed by 87 respondents (40.09%) and 58 respondents (26.73%) suffering from moderate and high level of suicidal ideation respectively.

The average score of 109 male respondents in BSS was 16.42 (S.D = 9.44) with maximum value of 33 and minimum value of 0. Specifically, 40 male respondents (36.70%) and 38 male respondents (34.86%) were facing low and moderate level of suicidal ideation respectively. Unexpectedly, 27 male respondents (24.77%) were overwhelming with high level of suicidal ideation. The average score of 108 male respondents in BSS was 18.79 (S.D = 8.82) with maximum value of 34 and minimum value of 0. Particularly, the results depicted that 27 respondents (25.00%), 49 respondents (45.37%) and 31 respondents (28.70%) were facing with low, moderate and high level of suicidal ideation respectively.

In brief, female respondents (Mean = 18.79) were demonstrated to have a greater propensity in suicidal ideation than male respondents (Mean = 16.42). The results of 20th item of BSS found a mean score of 0.12 (S.D = 0.37). Specifically, 21 respondents attempted suicide previously whereby 17 respondents (7.8%) committed suicide attempts once whereas 4 respondents (1.8%) attempted suicide twice or more. Nonetheless, the findings of 21st item of BSS yielded a mean score of 0.05 (S.D = 0.28). Positively, 13 out of 21 respondents believed their wish to die during the last attempt had decreased. Still, there were some worrying situations whereby 5 respondents and 3 respondents stated their wish to die during the last attempt was becoming moderate and increased respectively.

Table 3

Suicidal Ideation among Respondents (N = 217)

Variable	n	%	Mean	S.D	Min	Max
Suicidal Ideation :						
(BSS) (N = 217)						
19 items			17.60	9.19	0	34
None (SI absence): 0	5	2.30				
Low: 1-12	67	30.88				
Medium: 13-24	87	40.09				
High: 25-38	58	26.73				
Low-High (SI presence): 1-38	212	97.70				
Male (N = 109)			16.42	9.44	0	33
None (SI absence): 0	4	3.67				
Low: 1-12	40	36.70				
Medium: 13-24	38	34.86				
High: 25-38	27	24.77				
Low-High (SI presence): 1-38	105	96.33				
Female (N = 108)			18.79	8.82	0	34
None (SI absence): 0	1	0.93				
Low: 1-12	27	25.00				

Medium: 12-24	49	45.37				
High: 25-38	31	28.70				
Low-High (<i>SI presence</i>): 1-38	107	99.07				
20th Item (N = 217)			0.12	0.37	0	2
<i>Past suicide attempts</i>						
Never: 0	196	90.3				
Once: 1	17	7.8				
Twice or more: 2	4	1.8				
21st Item (N = 21)			0.05	0.28	0	2
<i>Wish to die during the last attempt</i>						
Decrease: 0	13	61.9				
Moderate: 1	5	23.8				
Increase: 2	3	14.3				

Note: S.D = Standard Deviation, Min = Minimum, Max = Maximum

Inferential Statistical Analysis

Relationship between Antecedent Variables and Independent Variable. Table 4 shows the correlation between background characteristic and depression. Correlation between respondent's age and depression was $r = -0.296^{**}$, $p = 0.000 (<0.05)$. There was a negatively and weakly significant relationship between age and depression among medical students in UPM. Correlation between depression with father's age ($r = 0.041$, $p = 0.546 \geq 0.05$), mother's age ($r = 0.040$, $p = 0.557 \geq 0.05$), father's years of education ($r = 0.052$, $p = 0.442 \geq 0.05$), mother's years of education ($r = 0.127$, $p = 0.061 \geq 0.05$) and family monthly income ($r = -0.121$, $p = 0.076 \geq 0.05$) pointed out that there was no significant relationship between parental age, parental years of education and family monthly income with depression among medical students in UPM.

Table 4

Correlation between Background Characteristic and Depression

Background Characteristic	Depression (r)
Respondent's age	-.296**
Father's age	.041
Father's years of education	.052
Mother's age	.040
Mother's years of education	.127
Family monthly income	-.121

Note: ** $p < 0.01$, * $p < 0.05$

Relationship between Antecedent Variables and Dependent Variable. Table 5 illustrates the correlation between background characteristic and suicidal ideation. Correlation between suicidal ideation with respondent's age ($r = -0.281^{**}$, $p = 0.000 < 0.05$) and family monthly income ($r = -0.142^*$, $p = 0.036 < 0.05$) revealed that there was a negatively and weakly significant relationship between respondent's age and family monthly income with depression among medical students in UPM. Correlation between suicidal ideation with father's age ($r = 0.059$, $p = 0.391 \geq 0.05$), mother's age ($r = 0.054$, $p = 0.429 \geq 0.05$), father's

years of education ($r = 0.034$, $p = 0.621 \geq 0.05$) and mother's years of education ($r = 0.111$, $p = 0.103 \geq 0.05$) underlined that there was no significant relationship between parental age and parental years of education with suicidal ideation among medical students in UPM.

Table 5

Correlation between Background Characteristic and Suicidal Ideation

Background Characteristic	Suicidal Ideation (r)
Respondent's age	-.281**
Father's age	.059
Father's years of education	.034
Mother's age	.054
Mother's years of education	.111
Family monthly income	-.142*

Note: ** $p < 0.01$, * $p < 0.05$

Relationship between Independent Variable and Dependent Variable. Table 6 portrays the correlation between depression and suicidal ideation. Correlation between depression and suicidal ideation was $r = 0.990^{**}$, $p = 0.000 (< 0.05)$. Therefore, there was a positively and strongly significant relationship between depression and suicidal ideation among medical students in UPM.

Table 6

Correlation between Depression and Suicidal Ideation

Depression	Suicidal Ideation (r)
	0.990**

Note: ** $p < 0.01$, * $p < 0.05$

Gender Differences in Independent Variable and Dependent Variable. Table 7 describes the gender differences in depression and suicidal ideation. Since the value of sig. t (p) was 0.041 (< 0.05), thus there was a significance difference in depression between male and female respondents. Whilst, since the value of sig. t (p) was 0.058 (≥ 0.05), hence there was no significance difference in suicidal ideation between male and female respondents.

Table 7

Gender Differences in Depression and Suicidal Ideation

Variable	Mean		t	p
	Male	Female		
Depression	10.60	12.23	-2.060	0.041
Suicidal Ideation	16.42	18.79	-1.907	0.058

Note: ** $p < 0.01$, * $p < 0.05$

Discussions

This present study was innovative in providing useful information regarding the prevalence, predictors and current situation of depression and suicidal ideation among medical students in Malaysia. Relatively, the medical students were reported to engage with certain severity in depression and suicidal ideation. Prior researches manifested that medical education was well

recognised as an intense and stressful education that required students to comprehend massive amount of knowledge and skills. Medical students have to sacrifice lots of things to maintain excellent academic performance as well as face numerous competition, threat of failure and others which might impair their physical, psychological and social functioning (Wolf & Kissling, 1984).

In essence, the female respondents were indicated to have a higher tendency in depression than the male respondents. Thus, we could imply that females were more prone to depression than males in this present study. Previous studies discovered that higher depressive symptoms among females as compared to males could be attributed to the more susceptibility among females to more appetite and weight disturbance, interpersonal relationships and changes in hormones (Carter et al., 2000; Albert, 2015).

The risk factors that lead to suicidal ideation could be attributed to family structure, academic pressure, binge drinking, fighting, considering or attempting running away from home, victim of bullying, feeling lonely and being sad/hopeless (Zhang et al., 2019). The female respondents were demonstrated to have a greater propensity in suicidal ideation than the male respondents. Therefore, we could summarise that females were more vulnerable to suicidal ideation than males in this current study. These findings could be explained whereby Xu et al. (2015) proposed that females may have a greater tendency to encounter some life events such as being unmarried, depression, uninsured, financial issues rather than males. Ibrahim et al. (2017) further supported the above statement saying that hopelessness components (future feeling and expectations as well as loss of motivation), depression, anxiety, and stress were significantly linked to suicidal ideation among females.

The findings of this study summarised that respondent's age, family monthly income and depression acted as the contributing variables that influence suicidal ideation. This finding was aligned with prior research by Ibrahim et al. (2017) which confirmed that age was a predictor of suicidal ideation and was negatively associated with suicidal ideation. Plus, this finding believed to be consistent with findings from Boxer et al. (1995) which claimed that socioeconomic status acted as one of the risk factors for suicide ideation whereby low socioeconomic status could link to suicide ideation. Thus, low family monthly income which was one of the contributing factors that led to low socioeconomic status could result in suicidal ideation. Moreover, this finding was in good agreement with the work by Tan et al. (2015) which reported that respondents with depressive symptoms had a 5.9 times higher suicidality risk by using the same instrument (i.e. PHQ-9) in studying depression among medical students in Malaysia. Nonetheless, respondent's age found to establish a significant negative relationship with depression. This current finding was consistent with the work from Jadoon et al. (2010) which claimed that the level of depression decreasing with age.

However, variables such as parental age and parental years of education did not significantly affect suicidal ideation. There was lacking of evidence and general agreements from prior studies with regards to relationship between parental age and parental years of education with suicidal ideation. In short, we could predict that the finding whereby parental age and parental years of education were associated with suicidal ideation was inconclusive and not persuasive. Additionally, parental age, parental years of education and family monthly income did not significantly affect depression as well. Even though there were limited studies that

explained relationship between parental years of education and family monthly income with depression, but there was still considerable ambiguity due to lacking general agreements or evidence from previous researches. Therefore, the finding saying that parental age, parental years of education and family monthly income were not associated with depression was convincing.

What was more, this study also deduced that there was significant gender difference in depression but no significant gender difference in suicidal ideation. The finding appeared to be well-substantiated research conducted by Brenneisen Mayer et al. (2016) which reviewed that higher prevalence of depression in female medical students than male medical students involved cultural factors linked to social stigma and gender inequity, personality traits, conflicting role demands, environment of medical school as well as medical practices and training. Meanwhile, this finding lent support to previous findings in the paperwork of Adhikari et al. (2017) which justified that there was no significant difference in suicidal ideation was discovered between male and female medical students.

Conclusion

In this current study, it was reported that there was a significant relationship between depression and suicidal ideation among medical students in UPM. This was proved by the results that determining the correlations between depression and suicidal ideation. Females also indicated to have higher propensity in depression and suicidal ideation which demonstrated by comparing the mean scores using PHQ - 9 and BSS. Furthermore, findings also manifested that parental age, parental years of education and family monthly income did not significantly affect depression. Whereas, parental age and parental years of education did not significantly affect suicidal ideation. In addition, respondent's age established a significant relationship with depression and suicidal ideation. Meanwhile, family monthly income also established a significant relationship with suicidal ideation. At last, this study summarised that there was significant gender difference in depression but no significant gender difference in suicidal ideation.

Theoretically, this study functioned as a source of up-to-date information to provide theoretical framework and new study findings on how significantly depression led to suicidal ideation. Nevertheless, it also filled the literature gap and came up with useful pragmatic evidences in determining relationship between depression and suicidal ideation which relevant to the target population which was medical students in Malaysia. Consequently, this current study provided sufficient and relevant evidence that lent support to theories in line with depression and suicidality.

Practically, this current study was highly convincible in providing insight under the possible implications of depression and suicidal ideation. The information and results obtained consistent with the findings of prior study and provided more possibilities of future researches. Moreover, this study gave a clearer view to indicate that medical students were experiencing depression and suicidal ideation gradually indeed.

In short, it was recommended that a larger and diverse sample size and study location should be adopted in future researches to increase reliability and applicability of the researches as well as to mitigate the limitations of the study. Nonetheless, more risk and protective factors

such as hopelessness, personality traits, locus of control, family history and mental health issues were some of the interesting examples which worth to be determined. Besides, it was of utmost important for future researchers to investigate this topic from a longitudinal perspective to identify development trends or changes in the target population. All in all, future researchers were advised to generate more distinguishable facts, views and perspectives on similar topic as limited research was available in Malaysia context as compared to other countries.

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