

Assessment of Mental Health and Quality of Life among University Students during Covid-19 Pandemic in Malaysia, 2021

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1 **Assessment of Mental Health and Quality of Life among University** 2 **Students during Covid-19 Pandemic in Malaysia, 2021**

3 **ABSTRACT**

4 **Background:** This research is conducted to know Malaysian university student's mental health
5 status and their quality of life during this COVID-19 pandemic in Malaysia, 2021. This study
6 aims to associate sociodemographic background, paranoia level and resilience level with
7 quality life. Quality of life is the general well-being of individuals whereas paranoia is the
8 thought process that causes irrational suspicion or mistrust, and resilient is the ability of an
9 individual able to adapt in faced the trouble.

10 **Methods:** The study was carried in the form of questionnaire that consisted of items on
11 sociodemographic information, paranoia and resilience level and quality of life status. Sample
12 population of 653 respondents were collected from both private and public universities. Data
13 were later analyzed in frequencies and percentages, Chi-square test and as well as binary
14 logistic regression (BLR).

15 **Results:** We found that the relation between QOL with resilience and paranoia. Normal (AOR
16 2.55) and high resilience (AOR=2.75) people showing have higher quality of life while people
17 with severe Paranoia (AOR 0.538) were less likely to have good Quality of life than those who
18 reported with moderate paranoia. The most significant result indicates that high levels of
19 resilience was associated with good QoL while student with moderate to severe paranoia will
20 have low QoL.

21 **Conclusion:** As a result, university students from different sociodemographic background with
22 high resilience and low paranoia level will have good quality of life. This study recommends
23 future study to consider and investigate external factors that could affect this study's outcome.

24 **Keywords:** Mental health, Quality of life, University students, COVID-19 Pandemic, Malaysia

25

26 INTRODUCTION

27 COVID-19 or previously known as “2019 novel coronavirus” is an infectious disease
28 that is caused by coronavirus¹ and high prevalence of adverse psychiatric symptoms were
29 reported by studies, showing that the pandemic has generally affected population’s mental
30 health during the pandemic period². Nevertheless, several studies have been conducted on how
31 the COVID-19 pandemic has affected the population from the mental health perspective.
32 Majority of the research has only been conducted in China and Western countries³⁻⁶ but none
33 in Malaysia. An online study conducted in China studied correlation between mental health
34 and social media exposure among the general population. The study has found high prevalence
35 of mental health problems associated positively with frequent social media exposure during
36 COVID-19 outbreak⁷. Study from China also found COVID-19 pandemic was associated with
37 immediate decline in mental health but increase in Quality of Life (QoL)⁸. Another study shows
38 a strong positive correlation in relationship between paranoia and QoL⁹. However, there is no
39 study made on how mental health in respect to paranoia and resilience affect quality of life in
40 university student in Malaysia. Thus, proving the dire need of our study.

41 The objective of our study is to determine the association between mental health and
42 quality of life. This study aims to determine the paranoia level among university students in
43 Malaysia during the pandemic. Moreover, this study aims to determine the resilience level of
44 university students in this new learning environment during COVID-19 pandemic which are
45 engendering high levels of fear and anxiety.

46 Lastly, the study also would like to determine the level of quality of life among
47 university students in Malaysia during COVID-19 pandemic. Individual’s QoL can be
48 evaluated by numerous factors such as stress level and optimum health condition. For
49 university students, stress from assignments’ submission, financial status, peer pressure and

50 future career prospects alongside with sleep disruptions, which is very common can results in
51 negative health outcomes and deteriorating individual's QoL¹⁰.

52 **METHODOLOGY**

53 To evaluate the quality of life and mental health status among university students during
54 COVID-19 pandemic, a cross-sectional study using online Google questionnaire was
55 conducted. The study setting's duration is from 5th of October 2020 until 24th November 2020.
56 In order to have a well-spread pool of respondent, sampling made on both public and private
57 universities in Malaysia using convenience sampling method. The inclusion criteria for
58 respondents is any University students whose age is above 18 years old and exclusion criteria
59 is students below 18 years old. Participation was purely voluntary and their consent was
60 obtained prior to the start of questionnaire. Their confidentiality was also reaffirmed.

61 Instrument consisted of sociodemographic background, paranoia level, resilience level
62 to quality of life of university students in Malaysia. To measure these variables, instruments
63 were used such as Paranoia (R-GPTS), Quality of Life (WHO-5) and Resilience (BRS).
64 Paranoia (R-GPTS) of 18 items had demonstrated good psychometric properties having
65 Cronbach's alpha of 0.926. This instrument employs a Likert scale of 0-4 where "0 = Not at
66 all", "1 = Not Really", "2 = Undecided", "3 = Somewhat" and "4 = Totally". In addition,
67 Quality of life items with Cronbach's alpha of 0.900 consisted of 5 items using Likert scale of
68 0-5 where 0= At no time, 1= Some of the time, 2= Less than half of the time, 3= More than
69 half of the time, 4=Most of the time and 5=All the time. Finally, Resilience (BRS) scale had 6
70 items comes with Cronbach's alpha of 0.715 and Likert scale of 1-5, where 1 stands for strongly
71 agree, 2 is for agree, 3 is neutral, 4 for disagree and 5 for strongly disagree.

72 654 data were collected from respondents but 1 was grouped into exclusion criteria.
73 653 data were analysed using SPSS (Statistical Package for Social Sciences) version 16. It was

74 used for editing, sorting, coding, and analysis of study variables. The excel data file was
75 imported into SPSS software. During data analysis there is 1 missing values from Paranoia 2
76 and using Missing Value Analysis (MVA) in SPSS, value was corrected immediately.
77 Frequencies and percentages as well as chi-square tests were performed. Binary logistic
78 regression (BLR) was performed with a 0.05 % confidence level to see a significant association
79 between dependent (QoL) and independent variables was applied.

80 **Study Instruments**

81 The response variable was Quality of Life (QoL). To determine the level of QoL, the
82 dependent variable was expressed as a dichotomous variable category 1 if having good QoL
83 and category 2 if having low QoL. QoL was generated using method of Likert asking questions
84 for each participant with some values of six responses, after that scores were added for each
85 namely, 0 =at no time, 1= some of the time, 2 =less than half of the time, 3=more than half of
86 the time, 4 =most of the time and 5 =all of the time. In view of this, the response variable
87 (QoL), the level of QoL of the i^{th} participants was measured as a dichotomous variable (Y_i): -

$$88 \quad Y_i = \begin{cases} 1 = \text{Having good quality of life(QoL) , if score above 13} \\ 2 = \text{Having low quality of life(QoL), if score below 13} \end{cases}$$

89

90 The Socio-economic and demographic characteristics were considered as the most
91 important determinants of QoL. The following explanatory variables were age, gender, race,
92 and level of study, year of study, type of university, residency, household income, PARANIOA
93 1, PARANIOA 2, and RESILIENCES included in the study.

94 **Statistical analysis**

95 Logistic regression was used especially popular with medical research in which the
96 dependent variable QoL is good or low quality of life. BLR is a type of regression analysis that

97 is used to estimate the relationship between a dichotomous dependent variable (QoL) and
 98 dichotomous, interval, and ratio-level independent variables. BLR is a type of regression
 99 analysis where the dependent variable (QoL) is a dummy variable (coded 1, 2), the dependent
 100 variable can take the value 1 with a probability of having a good quality of life π , or value 2
 101 with probability of a having low quality of life $(1 - \pi)$. The relationship between the predictor
 102 and response variables is not a linear function in logistic regression; instead, logistic regression
 103 function, which is the logit transformation of π , is used. Consider a collection of p explanatory
 104 variables denoted by the vector $X'=(X_1, X_2, \dots, X_p)$. Let the conditional probability that the
 105 outcome is present be denoted by $P(Y = 1|X) = \pi$.

$$106 \quad \pi(x) = \frac{\exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_p)}{1 + \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_p)}$$

107 Then, the log-odds of having $Y=1$ (having good quality of life) is modelled as a linear
 108 function of the explanatory variables as:

$$109 \quad \ln\left(\frac{\pi(x)}{1 - \pi(x)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_p$$

110 Where, β_0 is the constant of the equation and, $\beta_1 \dots \beta_k$ are the coefficients of the
 111 predictor variables. The above equation is known as the logistic function.

112 **Methods of Parameter Estimation**

113 Logistic regression uses maximum likelihood (ML) to generate the estimates of the
 114 slopes. Logistic regression yields unbiased and efficient estimates of β and OLS regression
 115 does not. The method of MLE yields to estimate values for the unknown parameters which
 116 maximize the probability of obtaining the observed set of data. Suppose having a sample of n
 117 independent observations $(y_i, x_i), i = 1, 2, \dots, n$. Where y_i denotes the value of a dichotomous
 118 outcome variable and x_i is the value of the explanatory variables for i^{th} participants and assume

119 $Y_i \sim \text{Bernoulli}(1, \pi)$. To find the ML of $\beta = \beta_0, \beta_1, \dots, \beta_k$, definition of the likelihood
 120 function as follows.

$$C = L(\beta) = \prod_{i=1}^n [\pi^{y_i} (1 - \pi)^{1-y_i}]$$

$$121 = \prod_{i=1}^n \left[\frac{\pi}{1 - \pi} \right]^{y_i} (1 - \pi)$$

$$122 = \prod_{i=1}^n \frac{e^{y_i \beta x_i}}{1 + e^{\beta x_i}}$$

123 Taking the natural logarithm of both sides yields the following expression for log
 124 likelihood function: Hence, through maximization, theoretically estimation can be made on the
 125 parameter vector β . But the equation is nonlinear in β and the estimates do not have a closed
 126 form expression. After developing the model for our data, it is necessary to investigate how
 127 effective the model is in describing the outcome variable and call it goodness of fit for
 128 categorical data.

129 **Ethic Approval**

130

131 All the participants were provided with informed consent before commencement of the
 132 survey. The ethical approval was acquired from the Centre of Research and Development,
 133 Asia metropolitan University (No. HEC25022022FOM0003), which is in accordance with the
 134 Declaration of Helsinki.

135 **RESULT**

136 **Table 1:** Social Demographic characteristic of the respondents (N=653)

Demographic variables	Response	Frequency	Percent
Age	18-20	206	31.5%

	21-26	423	64.8%
	>27	24	3.7%
Gender	Female	445	68.1%
	Male	208	31.9%
Race	Malay	501	76.7%
	Chinese	50	7.7%
	Indian	47	7.2%
	Others	55	8.4%
Level of study	Pre-University	42	6.4%
	Diploma	132	20.2%
	Degree	438	67.1%
	Postgraduate	41	6.3%
Year of Study	Year 1	180	27.6%
	Year 2	104	15.9%
	Year 3	208	31.9%
	Year 4	134	20.5%
	Year 5	27	4.1%
Type of university	Public	513	78.6%
	Private	140	21.4%

Residency	Alone	34	5.2%
	With Friend	130	19.9%
	With Family	489	74.9%
Household Income	<RM4849	299	45.8%
	RM4850-	226	34.6%
	RM10959		
	>RM10960	128	19.6%

137

138 Table 1 represents the sample of social demographic characteristics. After data cleaning
139 all respondents were found to be usable. In this research, a total of 653 individual (n = 445
140 male and n = 208 female) were received. Among the respondents, more than half were Malays
141 at age group of 21-26 years (n = 423, 64.8%). There was a significant value between public (n
142 = 513, 78.6%) and private university (n = 140, 21.4%). Majority of respondent is staying with
143 their family members (n = 489, 74.9%) and more than three-quarters of the students were
144 pursuing their undergraduate studies (n= 612, 93.7%) otherwise postgraduate (n = 41, 6.3%).
145 Half of them were either in their third or fourth year of study (n = 369, 56.5%) and in term of
146 family household monthly income, most of the respondents were less than RM4849 (n = 299,
147 45.7%).

148 **Table 2:** Association of Demographic variable with quality of life (N=653)

Demographic variables	Response	Low QOL n(%)	Good QOL n (%)	P value
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Age	18-20	91 (13.9%)	115 (17.6%)	0.008
	21-26	228 (34.9%)	195 (29.9%)	
	>27	7 (1.1%)	17 (2.6%)	
Gender	Female	232 (35.5%)	213 (32.6%)	0.098
	Male	94 (14.4%)	114 (17.5%)	
Race	Malay	254 (38.9%)	247 (37.8%)	0.801
	Chinese	22 (3.4%)	28 (4.3%)	
	Indian	24 (3.7%)	23 (3.5%)	
	Others	26(4.0%)	29(4.4%)	
Level of study	Pre-University	15 (2.3%)	27 (4.1%)	0.031
	Diploma	66 (10.1%)	66 (10.1%)	
	Degree	231 (35.4%)	207(31.7%)	
	Postgraduate	14 (2.1%)	27 (4.1%)	
Year of Study	Year 1	69 (10.6%)	111 (17.0%)	0.005
	Year 2	54 (8.3%)	50 (7.7%)	
	Year 3	116 (17.8%)	92 (14.1%)	
	Year 4	75 (11.5%)	59 (9.0%)	
	Year 5	12 (1.8%)	15 (2.3%)	
Type of university	Public	249 (38.1%)	264 (40.4%)	0.175
	Private	77 (11.8%)	63 (9.6%)	
Residency	Alone	17 (2.6%)	17 (2.6%)	0.149
	With Friend	55 (8.4%)	75 (11.5%)	
	With Family	254 (38.9%)	235 (36.0%)	
Household Income	<RM4849	164 (25.1%)	135 (20.7%)	0.60

RM4850-	101 (15.5%)	125 (19.1%)
RM10959		
>RM10960	61 (9.3%)	67 (10.3%)

149

150 Based on Table 2, WHOQOL-5 obtained shows insignificance value (p=0.098) of QOL
 151 with gender. It shows that gender does influence QOL. When comparing to the race (p=0.801)
 152 Malay percentage for low QOL (38.9%) is higher compared to high QOL (37.8%), showcasing
 153 how the QOL does effect, but not all races. The types of university and residency also showing
 154 insignificant value (p=0.175) and (p=0.149) respectively. The graft showcased insignificant
 155 value (p=0.60) between household incomes that make more than RM10960 than the household
 156 that makes less than RM4849 with the amount of low QOL (25.1%) is higher than the high
 157 QOL (20.7%).

158 **Table 3:** Association of demographic life with Resilience (N=653)

Demographic variables	Response	Low Resilience n(%)	Normal Resilience n(%)	High Resilience n(%)	P-value
Age	18-20	69 (10.6%)	74 (11.3%)	63 (9.6%)	0.274
	21-26	150 (23.0%)	178 (27.3%)	95 (14.5%)	
	>27	8 (1.2%)	10 (1.5%)	6 (0.9%)	
Gender	Female	143 (21.9%)	188 (28.8%)	114 (17.5%)	0.106
	Male	84 (12.9%)	74 (11.3%)	50 (7.7%)	
Race	Malay	158 (24.2%)	220 (33.7%)	123 (18.8%)	0.009
	Chinese	20 (3.1%)	16 (2.5%)	14 (2.1%)	
	Indian	25 (3.8%)	12 (1.8%)	10 (1.5%)	

	Others	24 (3.7%)	14 (2.1%)	17 (2.6%)	
Level of study	Pre-University	18 (2.8%)	17 (2.6%)	7 (1.1%)	0.013
	Diploma	53 (8.1%)	59 (9.0%)	20 (3.1%)	
	Degree	138 (21.1%)	170 (26.0%)	130 (19.9%)	
	Postgraduate	18 (2.8%)	16 (2.5%)	7 (1.1%)	
Year of Study	Year 1	60 (9.2%)	70 (10.7%)	50 (7.7%)	0.240
	Year 2	39 (6.0%)	32 (4.9%)	33 (5.1%)	
	Year 3	69 (10.6%)	89 (13.6%)	50 (7.7%)	
	Year 4	51 (7.8%)	56 (8.6%)	27 (4.1%)	
	Year 5	8 (1.2%)	15 (2.3%)	4 (0.6%)	
Type of university	Public	166 (25.4%)	212 (32.5%)	135 (20.7%)	0.045
	Private	61 (9.3%)	50 (7.7%)	29 (4.4%)	
Residency	Alone	15 (2.3%)	13 (2.0%)	6 (0.9%)	0.446
	With Friend	51 (7.8%)	50 (7.7%)	29 (4.4%)	
	With Family	161 (24.7%)	199 (30.5%)	129 (19.8%)	
Household Income	<RM4849	99 (15.2%)	124 (19.0%)	76 (11.6%)	0.442
	RM4850- RM10959	79 (12.1%)	84 (12.9%)	63 (9.6%)	
	>RM10960	49 (7.5%)	54 (8.3%)	25 (3.8%)	
TOTAL		227	262	164	

159

160 From table 3 where it shows the tabulation of the association of demographic life with
161 resilience, there are multiple variables that shown significant findings. The resilience scores
162 were analysed in relation to different variables no significant finding found for Age ($p=0.274$)

163 and Gender (p=0.106). The resilience scores were found to be varying significantly depending
 164 on Race (p=0.009) and level of study (p=0.013). In relation to year of study, no significant
 165 finding was found (p=0.240). The resilience level of participants was found significant in type
 166 of university (p=0.045). Finally, in relation to relation to residency and household income there
 167 is no significant finding since (p=0.446) and (p=0.442) respectively.

168 **Table 4:** Association of demographic life with Paranoia 1 among respondents (N=653)

		Average	Elevated	Moderatel y severe	Severe	Very severe	P- value
Age	18-20	46 (7.0%)	78 (11.9%)	50 (7.7%)	22 (3.4%)	10 (1.5%)	0.002
	21-26	113 (17.3%)	129 (19.8%)	102 (15.6%)	46 (7.0%)	33 (5.1%)	
	>27	3 (0.5%)	16 (2.5%)	0 (0.0%)	1 (0.2%)	4 (0.6%)	
Gender	Female	102 (15.6%)	148 (22.7%)	112 (17.2%)	52 (8.0%)	31 (4.7%)	0.182
	Male	60 (9.2%)	75 (11.5%)	40 (6.1%)	17 (2.6%)	16 (2.5%)	
Race	Malay	128 (19.6%)	168 (25.7%)	114 (17.5%)	53 (8.1%)	38 (5.8%)	0.940
	Chinese	12 (1.8%)	17 ((2.6%)	11 (1.7%)	6 (0.9%)	4 (0.6%)	
	Indian	9 (1.4%)	17 (2.6%)	11 (1.7%)	7 (1.1%)	3 (0.5%)	
	Others	13 (2.0%)	21 (3.2%)	16 (2.5%)	3 (0.5%)	2 (0.3%)	

Level of study	Pre-Universit y	14 (2.1%)	17 (2.6%)	8 (1.2%)	2 (0.3%)	1 (0.2%)	0.027
	Diploma	22 (3.4%)	43 (6.6%)	40 (6.1%)	18 (2.8%)	9 (1.4%)	
	Degree	118 (18.1%)	142 (21.7%)	98 (15.0%)	48 (7.4%)	32 (4.9%)	
	Postgradu ate	8 (1.2%)	21 (3.2%)	6 (0.9%)	1 (0.2%)	5 (0.8%)	
Year of Study	Year 1	45 (6.9%)	67 (10.3%)	41 (6.3%)	15 (2.3%)	12 (1.8%)	0.691
	Year 2	25 (3.8%)	41 (6.3%)	22 (3.4%)	11 (1.7%)	5 (0.8%)	
	Year 3	(7.8%)	61 (9.3%)	52 (8.0%)	28 (4.3%)	16 (2.5%)	
	Year 4	30 (4.6%)	45 (6.9%)	33 (5.1%)	13 (2.0%)	13 (2.0%)	
	Year 5	11 (1.7%)	9 (1.4%)	4 (0.6%)	2 (0.3%)	1 (0.2%)	
Type of universi ty	Public	134 (20.5%)	182 (27.9%)	113 (17.3%)	48 (7.4%)	36 (5.5%)	0.094
	Private	28 (4.3%)	41 (6.3%)	39 (6.0%)	21 (3.2%)	11 (1.7%)	
Residen cy	Alone	6 (0.9%)	14 (2.1%)	7 (1.1%)	1 (0.2%)	6 (0.9%)	0.246
	With Friend	29 (4.4%)	48 (7.4%)	32 (4.9%)	14 (2.1%)	7 (1.1%)	
	With Family	127 (19.4%)	161 (24.7%)	113 (17.3%)	54 (8.3%)	34 (5.2%)	
	<RM4849	81 (12.4%)	105 (16.1%)	70 (10.7%)	27 (4.1%)	16 (2.5%)	
						0.586	

Household Income	RM4850- old RM10959	54 (8.3%)	77 (11.8%)	52 (8.0%)	24 (3.7%)	19 (2.9%)
Income	>RM10960	27 (4.1%)	41 (6.3%)	30 (4.6%)	18 (2.8%)	12 (1.8%)

169

170 **Table 5:** Association of demographic life with Paranoia 2 among respondents (N=653)

		Average	Elevated	Moderately severe	Severe	Very severe	P- value
Age	18-20	42 (6.4%)	61 (9.3%)	55 (8.4%)	37 (5.7%)	11 (1.7%)	0.035
	21-26	75 (11.5%)	136 (20.8%)	81 (12.4%)	80 (12.3%)	51 (7.8%)	
	>27	3 (0.5%)	12 (1.8%)	5 (0.8%)	4 (0.6%)	0 (0.0%)	
Gender	Female	84 (12.9%)	143(21.9 %)	96(14.7%)	78(11.9%)	44(6.7%)	0.881
	Male	36 (5.5%)	66(10.1%)	45(6.9%)	43(6.6%)	18(2.8%)	
Race	Malay	97 (14.9%)	156(23.9 %)	101(15.5 %)	98(15.0%)	49(7.5%)	0.498
	Chinese	7 (1.1%)	17(2.6%)	15(2.3%)	8(1.2%)	3(0.5%)	
	Indian	7 (1.1%)	16(2.5%)	8(1.2%)	10(1.5%)	6(0.9%)	
	Others	9 (1.4%)	20(3.1%)	17(2.6%)	5(0.8%)	4(0.6%)	
Level of study	Pre-University	10 (1.5%)	11 (1.7%)	12 (1.8%)	7 (1.1%)	2 (0.3%)	0.200
	Diploma	18 (2.8%)	44 (6.7%)	38 (5.8%)	25 (3.8%)	7 (1.1%)	

	Degree	88 (13.5%)	137 (21.0%)	78 (11.9%)	83 (12.7%)	52 (8.0%)	
	Postgraduate	4 (0.6%)	17 (2.6%)	13 (2.0%)	6 (0.9%)	1 (0.2%)	
Year of Study	Year 1	40 (6.1%)	61 (9.3%)	42 (6.4%)	28 (4.3%)	9 (1.4%)	0.200
	Year 2	21 (3.2%)	31 (4.7%)	26 (4.0%)	20 (3.1%)	6 (0.9%)	
	Year 3	32 (4.9%)	71 (10.9%)	44 (6.7%)	35 (5.4%)	26 (4.0%)	
	Year 4	22 (3.4%)	36 (5.5%)	26 (4.0%)	32 (4.9%)	18 (2.8%)	
	Year 5	5 (0.8%)	10 (1.5%)	3 (0.5%)	6 (0.9%)	3 (0.5%)	
Type of university	Public	97 (14.9%)	170 (26.0%)	109 (16.7%)	92 (14.1%)	45 (6.9%)	0.520
	Private	23 (3.5%)	39 (6.0%)	32 (4.9%)	29 (4.4%)	17 (2.6%)	
Residency	Alone	2 (0.3%)	14 (2.1%)	7 (1.1%)	7(1.1%)	4 (0.6%)	0.096
	With Friend	18 (2.8%)	33 (5.1%)	37 (5.7%)	27 (4.1%)	15 (2.3%)	
	With Family	100 (15.3%)	162 (24.8%)	97 (14.9%)	87 (13.3%)	43 (6.6%)	
Household Income	<RM4849	61 (9.3%)	91 (13.9%)	69 (10.6%)	50 (7.7%)	28 (4.3%)	0.853
	RM4850- RM10959	35 (5.4%)	78 (11.9%)	46 (7.0%)	46 (7.0%)	21 (3.2%)	
	>RM10960	24 (3.7%)	40 (6.1%)	26 (4.0%)	25 (3.8%)	13 (2.0%)	

172 As stated in table 4 and 5, gender does have insignificant value (P=0.182), (P=0.881)
 173 on the association with paranoia. Besides that, race also has insignificant value (p=0.498) that
 174 can be used to associate it with paranoia as well as type of residency where the (p=0.246),
 175 (p=0.096) which can be interpreted to show its association with paranoia. Moving on to age, it
 176 has recorded a significant value (P=0.002), (p=0.035) in relation to paranoia. Based on our
 177 result, household income has an insignificant value (p=0.586), (p=0.853) which can associate
 178 it to paranoia.

179 **Table 6:** Relation between quality of life with Resilience and Paranoia among respondents
 180 (N=653)

		Adjusted OR	95% C.I.		P value
			Lower	Upper	
Resilience	Low				
	Normal	2.559	1.759	3.722	<0.01
	High	2.756	1.809	4.199	<0.01
Paranoia	Mild				
	Moderate	0.763	0.508	1.147	0.193
	Severe	0.538	0.368	0.788	<0.01

181 Table 6 shows relation between QOL with resilience and paranoia. Normal (AOR 2.55)
 182 and high resilience (AOR=2.75) people showing have higher quality of life while people with
 183 severe Paranoia (AOR 0.538) were less likely to have good Quality of life than those who
 184 reported with moderate paranoia.

185

186 **DISCUSSION**

187 From table 2, age is significant to QoL. From one study, compared to primary school
188 and below, respondents of secondary school education standard and above indicate better
189 QoL¹¹. Confirming with age comes better level of understanding than those of younger age due
190 to higher level of cognitive perception. However, contradicting a study made on epileptic
191 patients, proving lack of association of QoL with individual's age¹². Gender is insignificant
192 with QoL. This is consistent with study on patients with coronary heart disease where gender
193 differences show insignificance¹³ but contradicting findings made on IHD patients where
194 female has lower QoL compared to male¹⁴. This study perceived race as insignificant to QoL
195 which agreeing with a study on QoL determinants among Malaysian cancer patients¹⁵.
196 However, study found that race practicing Buddhism has higher QoL compared to other races
197 due to their believe that birth, aging, illness, and death were the natural processes of life¹⁶.
198 Table 2 also demonstrates that QoL is significant with level of studies, where findings are
199 aligned with a study claiming QoL varies based on the process in which the subject is studying,
200 and applies to undergraduate and postgraduate students¹⁷. However, contradicts with a study
201 on Iranian patients with Beta-thalassemia major as there were no statistically significant
202 relationships between QoL with education status¹⁸. There is a significant relationship between
203 the variable QoL and year of study. Based on a study done in [18], the final year students in
204 the studies have good QoL. Although one study done among final year Medical students shows
205 higher rates of anxiety and depression than those seen in the general population¹⁸. Type of
206 university is insignificant to QoL. Two studies were found contradicting this claim, where it
207 states *Escola Bahiana de Medicina e Saúde Pública* (EBMSP) students presented lower scores
208 on scales related to the physical aspect domains relative to students at a Brazilian public
209 university¹⁹, but higher scores on all scales related to the emotional domains of health-related
210 quality of life²⁰. Residency is insignificant with QoL, however one contradicting study
211 explained the uncertainty over their work, completion of their studies, and needing to juggle

212 between household tasks and caring for their siblings while attending online courses
213 simultaneously affected their anxiety²¹. However, QoL with household income shows no
214 correlation but one study contrasting the negative correlation of QoL and household incomes²².
215 Economically, the students became worried about their failure to manage their financial and
216 educational responsibilities due to the lack of family income and loss of career prospects and
217 self-financing of their studies²¹.

218 From Table 3: Association of demographic life with resilience (n=227,34.76%) has low
219 resilience and (n=426,65.24%) has normal resilience to high resilience, deducing that more
220 than half Malaysian university students has normal to high resilience. In respect of resilience
221 to age, it is insignificant and no previous study was made on university student's age with
222 resilience level even so, a study shows significant correlation between resilient with age among
223 international students in public higher education institutions in Malaysia²³. Comparison
224 however, was made heavily between younger adult and older adult resilience level. For gender,
225 our finding was insignificant and result was aligned with a study where possible gender
226 differences shows no significant differences except for distraction-oriented and social
227 diversion-oriented coping toward resilience²⁴. However, contradicts a study where
228 psychological resilience scores were found to differ significantly between genders, and male
229 participants' mean psychological resilience score was found to be higher than that of the female
230 participants²⁵. Resilience level is significant with race. The difference in the prevalence by
231 different ethnic groups is also seen in other studies²⁹. In Malaysia, this might be due to the
232 ethnic groups mentioned above being mainly in the more disadvantaged and economically less
233 affluent quarters of Malaysian society²⁹. When comparing resilience level to level of study,
234 individuals with degree have better resilience level and consistent with other studies showing
235 that psychological resilience varies according to the level of education. Findings shown high
236 education level is an important factor for psychological resilience. High level of education can

237 positively affect coping skills and the development of social skills, thereby increasing
238 psychological resilience²⁴. When the same groups were compared in terms of psychological
239 resilience, individuals with university education have a higher mean score than individuals with
240 high school education and lower level of education. This finding of the study seems to be
241 consistent with studies showing that psychological resilience varies according to the level of
242 education²⁵. However, there is no significant difference level of resilient based on program of
243 study²³. Year of study shows no significance with resilience, and needing more study made to
244 investigate these aspects. Resilience is significant to type of university in our study but disagree
245 with a study where in general, no significance difference found in public and private university
246 student's resiliency except in autonomy and spiritual aspects²⁸. This study shown no
247 significance between resilience and residency but study found university students with higher
248 level of perceived social support from friends and lower level of depressive symptoms are more
249 likely to report higher level of resiliency²⁶. Household income has no significance to resilience
250 in our study contrary with a study proven that family resilience factors and the level of their
251 families' income is significant to the way resilience might be manifested in situations of
252 cumulative stressors like poverty²⁷.

253 Table 4 and 5 show association result of sociodemographic factor to paranoia 1 which
254 is reference part of R-GPTS questionnaire and paranoia 2 for persecution. All
255 sociodemographic factors have similar interpretation of p- values in association to paranoia 1
256 and 2 except for the level of study. According to study which uses linear regression finding,
257 age is significantly associated to paranoia in terms of reference and persecution aspects³¹. Bird
258 et al justifies those paranoid thoughts are habitual in adolescent³⁰. Next, an insignificant
259 association of gender with paranoia contradicts the epidemiological study, showing high
260 prevalence of paranoia in female. This is supported by those with paranoid personality disorder
261 (PPD) are those from the disadvantaged and vulnerable group³¹. Moreover, race has an

262 insignificant finding thus indefinite conclusion is drawn their association to paranoia.
263 However, a study concludes that racial prejudice such as perceived threats (skin colours) and
264 socioeconomic status intensify the risk of mental disorders³². Furthermore, mistreatment and
265 victimization play a role on developing paranoid symptoms³⁵. Level of study has significant
266 correlation with paranoia. Paranoia 1 indicates that higher education level increases the
267 prevalence of paranoia especially in social reference as mentioned in the study³³. On the
268 contrary, level of study and paranoia 2 is insignificantly associated. Raihani and Bell, 2017
269 stated that more exploratory study needs to be done on highly educated people to gain insights
270 on paranoia persecution thought³⁸. Respondent's year of study is insignificantly associated to
271 paranoia. Nevertheless, year of study could not be totally ruled out as one of the contributing
272 factors that affect their mental health. A study on final year students shown a decline in mental
273 health status where on average the respondents were depressed and slightly anxious due the
274 pandemic³⁴. Type of residency also recorded an insignificant finding on its association to
275 paranoia. Contradictory to this, a study concluded that those living alone or feeling lonely can
276 develop paranoia³⁷. As for the finding on the income status, a study by (Iocovino, Jackson,
277 Oltmanns, 2014) as supported by (Harper, 2011) stated that a person from the marginalized
278 socioeconomic and race, who are prone to discrimination and unfair treatment, can be more
279 paranoid than the privileged individuals³⁵. This study contradicts that household income result
280 in an insignificant value on association of income to paranoia.

281 From Table 6 of regression model, the results for high levels of resilience was
282 associated with good QoL while student with moderate to severe paranoia will have low QoL.
283 Student's paranoid level was high and it was assumed that sufficient evidence exists to reject
284 the null hypothesis and indicate that paranoia QoL are linked. However, previous study shown
285 that anxiety was positively associated with paranoia in psychosis community samples that
286 reported positive associations with attachment anxiety and ideas of social reference and

287 persecution subscales of paranoia³⁹ and the other study also show result are which are
288 consistent with the hypothesis of paranoia is associated with dysfunctional strategies of self-
289 esteem regulation which will affect the QoL⁴⁰. The last study was found that psychological
290 symptom including paranoia have negative correlation with quality of sleep thus affecting
291 quality of life⁴¹. Meanwhile, for resilience ($p < 0.05$) shown that there is enough evidence to
292 reject the null hypotheses and this can be supported by previous study that show higher
293 resilience levels were associated with a better perception of self-reported QoL and the domains
294 of WHOQOL-BREF⁴² and a systematic review and meta-analysis of the efficacy of resilience
295 training programs demonstrated that they led to improvement in resilience, nearly significant
296 improvement in Hidranitis Suppurativa QoL⁴³. On the other study shown that in light of the
297 strong relationship between increased life stress and reduced QL, identifying factors that
298 support resilience is a logical step for improving QoL⁴⁴. Thus, those previous studies supported
299 that high resilience will have better QoL while QoL negatively associated with paranoia.

300

301 **CONCLUSIONS**

302 Sociodemographic background, paranoia and resilience were significant predictors of
303 quality of life. Age, gender, race and type of university influence student's resilience, paranoia
304 level and quality of life. Reported that university students who has high level of resilience has
305 good QoL while student with moderate to severe paranoia have low QoL. This infers that
306 university students from different sociodemographic background with high resilience and low
307 paranoia level will have good quality of life. The study has an implication for policy makers
308 and Ministry of Education to ensure student's good quality of life in order to enhance resilience
309 and reduce paranoia level.

310

311 **LIMITATIONS**

312 This study however imposes some limitations which are the possibility of external
313 factors interfering with our current causal factors. Example, we are not considering in our
314 study the participant’s past and current mental health history. Moreover, an online
315 questionnaire was used and unreliability of whether the respondents answered the questions
316 honestly need to be considered. Interpretations and understanding of the questions asked can
317 affect the outcome. Unless we can verify that all of the respondents had the same understanding
318 of the questions, result can be subjective. Besides that, sample bias need to considered since
319 questionnaire distributed are through mutual

320

321 **AVAILABILITY OF DATA AND MATERIALS**

322 The datasets generated and/or analyzed during the current study are not publicly available due
323 to confidentiality; however, data is accessible from the corresponding author on reasonable
324 request.

325

326 **ABBREVIATIONS**

- 327 **QOL:** Quality of Life
328 **R-GPTS:** Revised Green et al. Paranoid Thoughts Scale
329 **BRS:** Brief Resilience Scale
330 **AOR:** Adjusted Odds Ratio
331 **COR:** Crude Odds Ratio
332 **95%CI:** 95% Confident Intervals

333

334

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339 [guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it).
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457

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476 **Contributions**

477 TM, AK, and AZ devised the project, the main conceptual ideas, and proof outline. TH
478 collected and analyzed the data. TM, AK and AI contributed to the interpretation of the results.
479 TK and AI took the lead in writing the manuscript. All authors provided critical feedback and
480 helped shape the research, analysis, and manuscript. The author(s) read and approved the final
481 manuscript.

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484 **ETHIC DECLARATIONS**

485 All the participants were provided with informed consent before commencement of the survey.
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490 **CONSENT FOR PUBLICATION**

491 Not applicable

492 **COMPETING INTERESTS**

493 The authors declare that they have no competing interests.

494 **CONFLICT OF INTEREST**

495 There is no conflict of interest.

496

497

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