ORIGINAL ARTICLE

Quality of life (QoL) among medical students of clinical years in Perak state, Malaysia: A study using the WHOQOL-BREF instrument

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ABSTRACT

Introduction:
Numerous stressors influence medical students' health and quality of life (QoL) in their clinical years. QoL can be assessed through the WHOQOL-BREF (World Health Organization Quality of Life Instrument). There have been relatively fewer studies done in Malaysia, so authors undertook the research to find out the QoL of the clinical year medical students in Perak.

Methods:
WHOQOL-BREF and a sociodemographic questionnaire were provided to the clinical phase MBBS students of Quest International University (QIU), and Royal College of Medicine Perak (RCMP). The analysis was performed using IBM SPSS version 22.0.

Results:
Quality of life significantly affected in year 5 students. High parental expectation affected the quality of life significantly (p<0.001). Financial problems strongly influenced physical health and quality of life.

Conclusion:
We conclude that year 5 was a period of major impairment to the quality of life of medical students. Medical schools need to develop strategies to counsel the students to improve the psychological wellbeing and quality of life.

Keywords
Medical student, clinical, mental health, psychological, quality of life

Introduction

WHOQOL-BREF, questionnaire of the World Health Organization's Quality of Life-Biomedical Research and Education Facility is a well-known reliable tool for assessing the quality of life. The primary goal of QoL assessment comprised of four significant aspects - psychological health, physical well-being, social relationships, and environmental conditions. Medical students are vulnerable to stress, anxiety, depression and thus affecting their quality of life. [1]

Ample research conducted in heterogeneous samples unveiled satisfactory psychometric properties of the WHOQOL-BREF questionnaire [2-5], but studies on medical students are relatively deficient. Decreased QoL scores were observed among medical students when pursuing undergraduate training is documented by previous researchers. Numerous stressors influence medical students' health and quality of life, such as the transition from pre-clinical to the clinical years, interaction with patients and family members, peer rivalry for academic excellence, an enormous load of new and vast medical knowledge to be learned in a stipulated time. [6-8] North American research reported depression of almost 23% of medical students, whereas 57% suffered from high emotional distress. [9] Similar findings documented from Saudi Arabia with a high prevalence of stress, depression and anxiety among medical students. [10]. A study at the University of Isfahan showed the relationship between quality of life and self-confidence. [11]. Sleep deprivation was also pointed out as a causative factor for the reduced quality of life. [12]

Decreased QoL is associated with greater affect in future, which includes an unhealthy lifestyle, variable psychological morbidity, academic failure, and deteriorating impacts on professional development. [13-16]. On the contrary, a physically and mentally fit student is more efficient to combat hurdles in an academic career. [1] A study from Saudi Arabia correlated the strong potential of a better QoL score with good health and academic excellence. [17] The assessment of QoL of medical undergraduates gives an insight into a student's mental wellbeing and allows appropriate context-specific interventions. It will prevent psychological catastrophe and improve health and QoL quality.

There are relatively fewer studies carried out in Malaysia, so authors undertook the research to determine the QoL of medical students interacting with these socio-demographic factors, year of study, family problems, parental expectation, financial problems, and psychiatric illness in the clinical phase in Ipoh, Perak.

Methods

Study period, study design and participants
In Malaysia, medical training is a five-year programme divided into two years of preclinical sciences, three years of clinical sciences and two years of internship. Students take courses including internal medicine, general surgery, paediatrics, obstetrics, orthopaedics, psychiatry, ENT, ophthalmology, dermatology, forensic medicine and radiology in the third and fourth years. This questionnaire-based research was conducted in January 2020 in Quest International University (QIU), and the Royal College of Medicine Perak (RCMP), Ipoh hospital, Taiping hospital, Teluk Intan hospital, and Sri Manjung hospital. QIU and RCMP students were stationed in these hospitals for the clinical posting.

Inclusion and exclusion criteria
Clinical phase students of the MBBS programme, who were available during the study and willing to participate voluntarily were included in the study, whereas all preclinical students were excluded.

Sampling
A cross-sectional study design was used to perform this research. One-proportion sample size calculation method was used to determine the sample size. The total sample size calculated with the inclusion of 10% possible missing data was 255 respondents. Purposive sampling was applied to achieve the objective of the study.

Study tool
There were two instruments for data collection:
(1) A socio-demographic questionnaire was used to obtain information about age, ethnicity, gender, and relationship status and
(2) World Health Organization Quality of Life Instrument (WHOQOL-BREF) to find out the quality of life of medical students. [2]

The WHOQOL-BREF is a well-known international quality of life assessment instrument, which is multilingual and available for developed and developing countries [18, 19]. WHOQOL-BREF consists of 26 items with a response range from 1 (very poor/ very dissatisfied/ not at all) to 5 (very good/ very satisfied/ extremely satisfied). Authors used the English version of the questionnaire as all the participants are well versed in English. Copies of the questionnaires were distributed to the students. The students were given approximately 15 minutes to complete the questionnaire independently. The study investigators clarified all uncertainties regarding the questionnaire. WHOQOL-BREF accentuates the subjective responses with four weeks of assessment and consists of four domains: physical health, psychological health, social relations, and environment. The scores are transformed into a linear scale between 0 and 100, with 0 being the least favourable and 100 being the most favourable. [2]

Data analysis
The data was analyzed using SPSS® version 22.0 (SPSS Inc., Chicago, IL, USA) for Windows®. Descriptive statistics were used to summarize the data collected. Spearman's Correlation test was used to assess the

relationship between the quantitative variables. The Chi-square test was performed to determine the association between qualitative variables. Mann Whitney U test and the Kruskal Wallis test were used to compare the mean rank difference between qualitative independent variables.

Ethical approval

We maintained confidentiality by avoiding identifying information such as name, address, and phone number of the subjects. We obtained an informed consent form and approval from the University's Research and Ethics Committees before data collection. Participants were informed that the study was voluntary. Participants were free to decline to answer questions or to leave a blank questionnaire if not willing to participate. All research data will remain confidential, and data protection was closely observed at every stage of our research.

Results

Table 1: Socio-demographic factors of respondents (n=274)

Socio-demographic factor	n	(%)
Age, median(IQR)	23	(2.0)
Ethnicity		
Malay	122	(44.5)
Chinese	38	(13.9)
Indian	107	(39.1)
Others	7	(2.6)
Gender		
Male	165	(60.2)
Female	109	(39.8)
Relationship status		
Single	273	(99.6)
Married	1	(0.4)

Table 1 depicts the socio-demographic factors and health status of medical students. As for ethnicity, most of the respondents were Malays and the second highest was Indian, followed by Chinese and the rest of the students from other races. The numbers of male respondents were higher compared to females. Out of 274 respondents, 273 were single, and only one respondent was married. As for the respondents' health status, only 2.6% suffered from psychiatric illness.

Table 2: Relationship between domain of quality of life

Quality of life	Physical health	Psychological health	Social relationship	environment
Physical health	1			
Psychological health	0.649*	1		
Social relationship	0.444*	0.538*	1	
Environment	0.620*	0.719*	0.616*	1

Note. *Correlation is significant p<0.01

Table 2 shows the relationship between the domain of quality of life. Spearman correlation test indicated that there

was a significant positive relationship between the quality of life. The quality of life was positively correlated.
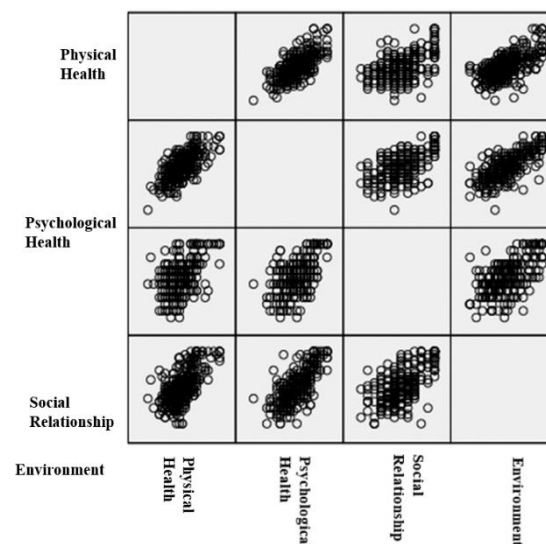

Figure 1: Scatter plot of quality of life
The scatter plot matrix shows positive relationship between the domain of quality of life

Table 3: Factors associated with physical health of quality of life

Variables	Median	(IQR)	Mean rank	U test	P value
Gender					
Male	12.571	(2.6)	136.66	8854.0	0.829×
Female	12.571	(3.4)	138.77		
Ethnicity					
Malay	12.571	(3.4)	140.00	3.643a	0.303a×
Chinese	12.000	(3.0)	114.96		
Indian	12.571	(2.9)	142.36		
Others	12.571	(3.4)	142.00		
Degree-year					
3	12.000	(3.1)	119.49	23.183a	<0.001a
4	12.000	(3.1)	126.95		
5	13.143	(3.4)	171.75		
Family problem					
Yes	11.429	(3.4)	92.55	2933.5	<0.001†
No	12.571	(2.9)	145.41		
High parental expectation					
Yes	12.000	(2.4)	118.66	6910.5	<0.001†
No	13.143	(3.4)	154.51		
Financial problem					
Yes	11.429	(2.3)	104.93	4789.00	<0.001†
No	12.571	(2.9)	148.25		
Psychiatric illness					
Yes	12.000	(1.7)	116.57	788.00	0.478×
No	12.571	(3.4)	138.05		

×p>0.05, †P<0.01 Note. aKruskal Wallis Test applied

Table 3 shows the association of physical health with quality of life among medical students. Gender and ethnicity were not significantly influencing the quality of

life. A compelling difference observed between the year of study and quality of life (p<0.001). Family problems and the quality of life were significant (p<0.001). High parental expectation affected the quality of life significantly (p<0.001). Financial problems strongly influenced physical health and quality of life. Psychiatric illness did not affect the quality of life of the students significantly.

Table 4: Factors associated with psychological health of quality of life

Variables	median	(IQR)	Mean rank	U test	P value
Gender					
Male	14.000	(4.0)	138.89	8762.5	0.719[×]
Female	13.333	(4.3)	135.39		
Ethnicity					
Malay	14.000	(4.2)	147.78	5.264[a]	0.153[a×]
Chinese	13.333	(4.0)	120.25		
Indian	13.333	(3.3)	130.47		
Others	14.667	(4.0)	159.43		
Degree-year					
3	13.333	(3.3)	127.80	7.225[a]	0.027[a*]
4	14.000	(4.7)	130.95		
5	14.667	(4.0)	156.70		
Family problem					
Yes	14.000	(4.0)	89.22	2797.0	<0.001[†]
No	12.667	(4.0)	146.00		
High parental expectation					
Yes	13.333	(4.0)	121.53	7284.00	0.001[†]
No	14.000	(3.3)	151.92		
Financial problem					
Yes	13.333	(4.7)	116.76	5593.00	0.013[*]
No	14.000	(4.0)	144.35		
Psychiatric illness					
Yes	10.667	(2.0)	62.86	412.00	0.011[*]
No	14.000	(4.0)	139.46		

[×]p>0.05, [*]p<0.05, [†]P<0.01 Note. [a] Kruskal Wallis Test applied

Table 4 shows the association of psychological health with quality of life among medical students. There is no significant difference between males and females with their quality of life. There was no big difference between Malay, Chinese, Indian and the other races with their quality of life. Year of study and quality of life were associated. Family problems naturally contributed to the quality of life. High parental expectation did not affect the quality of life to much of an extent. Financial problems affected the quality of life (p=0.013). Psychiatric illness did not affect the quality of life of the students (p= 0.011).

Table 5 shows the association of social relationships with the quality of life among medical students. There was no significant difference between genders with their quality of life. Ethnicity was statistically minuscule with quality of life. Year of study (Degree-year) did not really influence the quality of life. There was a compelling difference between family problems and the quality of life (p<0.001). High parental expectation and the quality of life was not

consequently associated. A telling difference between financial problems and the quality of life was observed (p<.001). Psychiatric illness did not significantly affect the quality of life of the students (p=0.081).

Table 5: Factors associated with social relationship of quality of life

Variables	median	(IQR)	Mean rank	U test	P value
Gender					
Male	13.3	(4.0)	141.68	8302.5	0.278
Female	12.0	(5.3)	131.17		
Ethnicity					
Malay	13.3	(4.0)	145.87	3.659a	0.301[a×]
Chinese	12.0	(4.0)	121.38		
Indian	13.3	(4.0)	132.67		
Others	16.0	(4.0)	152.93		
Degree-year					
3	13.3	(5.3)	132.94	4.634a	0.099[a×]
4	13.3	(4.0)	127.53		
5	13.3	(4.0)	152.51		
Family problem					
Yes	12.0	(4.7)	97.94	3154.5	<0.001[†]
No	13.3	(4.0)	144.46		
High parental expectation					
Yes	13.3	(4.0)	124.47	7665.5	0.009[†]
No	13.3	(4.0)	149.27		
Financial problem					
Yes	12.0	(4.0)	100.74	4504.5	<0.001[†]
No	13.3	(4.0)	149.63		
Psychiatric illness					
Yes	10.6	(6.7)	86.29	576.00	0.081[×]
No	13.3	(4.0)	138.91		

[×]p>0.05, [*]p<0.05, [†]P<0.01 Note. [a] Kruskal Wallis Test applied

Table 6 shows factors associated with the environment of quality of life. Malays have the highest association with the environment of quality of life compared to Chinese and Indian students. Year 5 students had the highest mean value, 160.07 compared to year 3 and year 4 students. Students without family problems had a higher mean value (p<0.001). Students who are not facing high parental expectations have a higher mean value (151.71) compared to students who faced the issue. (p=0.002). There is no meaningful difference between gender and psychiatric illness with an environment of quality of life. Male students have a lower mean value which is 138.91 compared to female students. Students who are free from psychiatric illness have a higher mean value compared with those who suffer from psychiatric illness. Furthermore, there is no significant association between genders with environment quality of life as the P-value is 0.842.

Discussion
Physical health domain of quality of life
Physical health is defined by the European Patients' Academy as the condition of the body, taking into

Table 6: Factors associated with environment of quality of life

Variables	median	(IQR)	Mean rank	U test	P value
Gender					
Male	14.5	(3.5)	136.72	8864.5	0.842×
Female	14.5	(5.0)	138.67		
Ethnicity					
Malay	14.5	(4.1)	152.83	8.284a	0.040a
Chinese	14.0	(3.5)	126.14		
Indian	14.0	(3.5)	125.13		
Others	13.0	(6.0)	121.14		
Degree-year					
3	13.5	(3.5)	123.13	10.804a	0.005a
4	14.0	(3.8)	134.55		
5	15.0	(3.9)	160.07		
Family problem					
Yes	12.5	(3.5)	90.43	2846.5	<0.001†
No	14.5	(3.8)	145.78		
High parental expectation					
Yes	13.5	(3.5)	121.76	7314.0	0.002†
No	14.5	(3.9)	151.71		
Financial problem					
Yes	13.0	(2.5)	98.83	4374.5	0.001†
No	14.5	(3.5)	150.26		
Psychiatric illness					
Yes	12.0	(3.5)	83.57	557.0	0.068×
No	14.5	(3.5)	138.91		

×$p>0.05$, *$p<0.05$, †$P<0.1$ Note. a Kruskal Wallis Test applied

consideration everything from the absence of disease to fitness level. In the present research, the physical health domain score of quality of life was significantly higher among those studying in year 5. Another research carried out by Alkatheri et al. among health professions students from Saudi Arabia, showed that the physical health domain score of quality of life was drastically increased as the year of study advances. The significant improvement in physical health domain scores was attributed to the lower perceived stress scores in the previous research. [20]

In the current research, the physical health domain score of Quality of life was significantly higher among those with fewer family problems. Based on a UK study, Quality of life (QoL) of individuals is closely related to the QoL of those around them, including parents or family members. [21] Based on research by Kelleher et al., children of single parents are twice as likely to have emotional and behavioural problems, 8 per cent versus 4 per cent for children from two-parent households. [22]

In the present research, the physical health domain score of quality of life was far higher among those with less financial problems and those with fewer expectations from their parents.

According to a research on the quality of life of medical students, students who lived with their family had higher scores of physical health domain of quality of life because they would be able to have better financial support from their family and decreased monthly expenses. They would be able to save money spent on accommodation as well as daily meals. This leads to an overall improved academic performance. [23]

Some of the examples of attitudes shown by the final year medical students in joint due to excessive stress levels in medical training would be reduced concentration, more errors, carelessness, absenteeism, and malpractice during examination. The most significant factors impacting student stress scores were nervousness, feeling depressed, feeling restless, and depression and, consequently, comes under medical student attitudes or personality behaviours due to stress. [24]

In the present research, the physical health domain score of quality of life was significantly higher among those with fewer parent expectations. Our findings are supported by studies from India, and Egypt regarding perceived stress and burnout among clinical year medical students. Authors found high parental expectations affect the quality of life of medical students overall together with anxiety and depression. [25, 26]

Psychological health of quality of life
Psychological health refers to the emotions, attitudes, mental outlook and behaviour of an individual. It is well-known that taking care of our psychological health throughout our life is essential, and it is linked to how we cope with stress and the type of decisions we make. One of the much talked about components of psychological health in this society is depression. A stressful environment, such as medical school, can cause a deterioration of one's mental health and lead to the student's poor psychological well-being. [27] We found a strong association between the psychological health of quality of life and financial problems. Most of the respondents with family problems tend to have increasingly higher psychological health domain scores as compared to respondents without family problems. Divorce and conflicts among parents can be a serious factor as the parents tend to argue and fight at home, which affects the children's emotional health. No matter how old the children are, to see their beloved parents fight and quarrel with each other can be hurtful and depressing. The prevalence of depressive symptoms varies across different populations, most frequent among university students worldwide. This may be due to poor coping mechanism skills.

A research carried out in Ethiopia showed medical students were 1.61 times more likely to experience depression due to stressful life events over the last 6 months, such as a financial crisis. Among 300 students, 143 students experienced depression due to financial stress. [28] In addition, anxiety is another component of psychological health often associated with depression; however, more emphasis should be put on its significance with mental health. Students in the clinical years experience more anxiety compared to those of pre-clinical students. [29] There was a significant higher psychological domain score

among final year students observed in the present research, which might be due to higher anxiety levels.

Factors associated with social relationship domain of quality of life.
We found that gender does not affect the social relations domain of quality of life. This study was supported by research carried out in Karachi, where it was stated that males and females had the same quality of life scores. This is because the medical curriculum and their workload are the same across both genders and there is not much disparity in the quality of life in different genders. [30] However, contradictory findings were reported by Saravanan et al. which found that female medical students are more affected compared to males which may be due to an excessive amount of workload students have and the decrease in the amount of sleep which affects their quality of life. This may be because female students are more competitive, and they tend to work harder to obtain higher grades. [31]

Despite belonging to different races, social relationships and the student's quality of life were not affected in our research. The study by Zhang et al. supported the findings of our research. [32] However, there was a contradictory finding by Gan et al., where it was stated that Chinese students were highly affected and had a low quality of life. Authors found it because of the varying environment the students grew up that affects their life expectancy. [33]

We found that the social relationship of quality of life was not significantly affected by the study year. This study is contraindicated by Saeed et al., where junior students were affected more in terms of quality of life than the seniors. This was because junior students are still new to the environment of medical school whereas the seniors have more well adapted to the situation and it makes them calmer and less affected. [24]

Family problems significantly affected the social relationship domain of quality of life in our research. Our findings were similar with Gan et al. This may be because the students might be thinking of the problems they face at home and lose concentration and are not able to cope with their studies, which impacts their social relationship domain of quality of life. They tend to become stressful and lose their temper easily, on the surrounding people and this might deteriorate their social relationships. [33]

We found an important association between high parental expectation with low social relationship domain of quality of life supported by an Egyptian study by El-Mesry et al. This is because of the stress the students might face due to high parental expectations. The student might have low self-esteem due to high parental expectation which could lead to the low social relationship domain of quality of life. [26]

We found a significant relationship between financial problems and social relationship quality of life. This is because students who have a solid financial background will not be worried about expenses, and they will concentrate more on their studies. In contrast, a student who has financial constraints must think about how they will manage their expenses, which will lead them to avoid socializing with others and make them feel inferior which could cause low self-esteem issues. This will make them lose their concentration whilst studying and will affect their social relationship of quality of life because of the consequences they face due to constant financial constraints. [33]

According to this study, there was no significant association between psychiatric illness and social relationship of quality of life. However, other researchers stated that psychiatric illness affects a medical student's quality of life [34]. They may not be able to cope with the studies and this will affect them mentally and put them under emotional and mental pressure.

Environment factor of Quality of life
Environment influences satisfaction and helps in the improvement of mental well-being which facilitates stress recovery of daily life and the performance of physical activities. We found the highest association with the environment of quality of life compared to Chinese and Indian students, which may indicate they have more stress. Year 5 students' higher mean value. Medical students in different years of study had different level of workloads. Year 5 is comparatively more stressful than other years. Previous researchers documented the stressful life of the clinical years, which corroborates with our findings. [25, 26, 29] We observed parental expectations play a key role. High expectations deteriorated the quality of life. A study by Sreeramareddy et al. found that psychological morbidity is prevalent amongst the students whose parents were medical doctors. Authors connected the incidence with higher parental expectations. [35] Another report by Griffin et al. showed that longer term burnout was evident in medical students who perceive that their parents expect them to choose a prestigious career, which is in relation to their family or cultural values. [36]

Conclusion
We conclude that physical health, psychological health, social relations, and environment affects the quality of life of a medical student. Year 5 was a period of major impairment to the quality of life of medical students. Medical schools need to develop strategies to counsel the students frequently to improve the quality of life. Parents need to play a key role for the betterment of mental health. A suitable change in the medical education may relieve pressure and improve the psychological wellbeing of a medical undergraduate.

Limitation and future scope

Our research is limited to a small population of students, future studies with relatively a larger population is welcomed.

Abbreviations

Quality of life (QoL), Quest International University (QIU), Royal College of Medicine Perak (RCMP)

Authors' contribution

a. Study planning: BR, SKC, SS, LJ

b. Data collection: CRN, VP, PV, JS, SKC

c. Data analysis/ interpretation: CRN, VP, PV, JS, SKC

d. Manuscript writing: BR, SKC, SS, LJ

e. Manuscript revision: BR, SKC, SS, LJ

f. Final approval: BR, CRN, VP, PV, JS, SKC, SS, LJ

g. Agreement to be accountable for all aspects of the work: BR, CRN, VP, PV, JS, SKC, SS, LJ

Availability of data and materials

All data underlying the results is available as part of the article, and no additional source data is required.

Competing interests

There is no financial, institutional or consultant conflict of interest for any author of this manuscript.

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