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The Relationship between Sleep Quality, Mindfulness and Quality of Life

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Abstract:- The aim of this study is to examine the level of sleep quality and quality of life, and to investigate the relationship between sleep quality, mindfulness and quality of life among undergraduate students. Cross-sectional study design was implemented. The Pittsburgh Sleep Quality Index (PSQI), the Mindful Attention Awareness Scale (MAAS) and the Quality-of-Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) were used in this study. A total of 139 undergraduate students from a public university in Malaysia have participated in this study. Correlation analysis was used to analyse the data. Results showed that there was a significant relationship between mindfulness and all domains of quality of life particularly satisfaction with feelings, social relations and physical health. Meanwhile, sleep quality was also found to be significantly related with quality of physical health and feelings. Nonetheless, no significant relationship was found between sleep quality and satisfaction with social relations. The obtained findings implied that practising mindfulness significantly increases undergraduate students' quality of life especially for the aspects of physical health, emotions and social relations. Implications of the findings were discussed.

Keywords:- *Sleep Quality; Mindfulness; Quality of Life; Undergraduate Students.*

I. INTRODUCTION

The quality of life refers to the enjoyment and satisfaction of individual's daily functioning in terms of physical health, emotions, level of independence and the social relations. Thus, past medical analysis aimed to evaluate the condition of physical and functioning health in patients but the importance of applying and sustaining the patients' quality of life has also been emphasised. It has been changed because they found out that a cure is not always possible instead of patient's mind-set willingly want to have lifestyle changes [1].

According to the National Sleep Foundation (NFS), a good night's sleep is defined as falling asleep within 30 minutes and waking up no more than once each night. Conversely, a poor sleep quality could lead us to tiredness and sleepiness. Reference [2] mentioned that enough sleep is most importance to the health of a person, and it is one of the most importance aspects to adolescents and young adults. They also noted that poor sleep quality in college students is caused by their own propensity to go without sleep and irregular sleeping patterns, which can lead to severe emotional imbalance, exhaustion, poor attention, reduced memory, and overall low life satisfaction. Poor sleep quality is obstructively related to good quality of life as it is almost linked with the psychiatric symptoms such depressive disorders [3].

Receptive attention and awareness of current events and experiences are referred to as mindfulness [4]. Mindfulness may also cause our minds to focus on what we are perceiving in the current moment rather than reminiscing about the past or fantasising about the future. In the context of students, mindfulness could benefit them to be more conscious, aware, and attentive especially in the classroom learning in order for them to understand the learning process excellently. Most everyone has the capacity to be mindful which everyone has different willingness to be aware and conscious with what is occurring in the present Individual mindfulness capacity differs as well, as it can be sharpened or dampened by a variety of factors. Mindfulness, by bringing clarity and vividness to experience, may also contribute to well-being and happiness, so directly improving life quality [5].

Therefore, poor sleep quality is obstructively related to good quality of life as it is almost linked with the psychiatric symptoms such depressive disorders [3]. As reference [6] reported, 60% from urban Midwestern university students were categorized as having poor-sleep quality. During the weekend, students' bedtimes and waking hours were pushed back, and they reported taking prescription or stimulant medications more frequently to alter their sleep or wakefulness. Mindfulness capacity, on the other hand, differs from person to person because it can be heightened or dimmed by a variety of situations. Furthermore, academic demands may elicit new challenges for students to manage personal and social development and therefore increase the risk of low quality of life [7]. The changes period for young adult coexist with college life were often related to many challenges such as academic pressures, interpersonal distress, homesickness, loneliness, isolation, financial burdens, managing novel freedoms and experiencing life as an adult [8].

Poor sleep quality has been associated to a lower quality of life, which has been shown to influence everyday functioning, memory, emotional intelligence, and academic performance [3]. Sleep deprivation can also contribute to psychological symptoms such as depression, anxiety, and other mental illnesses. Furthermore, anxiety issues appear to be linked to adolescent sleeplessness. Most importantly, neuropathic pain appears to be closely linked to both psychiatric disorders and poor sleep quality. While for students, sleep has been found to be least priority due to over load coursework, other tasks, and constantly feel that they need to

meet up with the deadlines. Therefore, it is encouraged for students to have good sleep quality despite of their busy schedules in order to keep their quality of life into optimum level.

Furthermore, mindfulness is thought to improve human well-being and health. Hence, many psychological and medical research have put their interest on mindfulness and its enhancement in recent years [9]. The topic's increasing prominence among researchers and physicians, however, is somewhat incongruous. Except for group studies by philosophically minded psychologists and cognitive scientists, mindfulness is basically a dimension of awareness. Mindfulness, on the other hand, promotes well-being directly by adding clarity and clarity to current experience, fostering closer and moment-to-moment sensory engagement with life without judgement rather than just self-acceptance [5]. Furthermore, mindfulness works indirectly by improving self-regulated functioning as a result of continuous attentional awareness to psychological, sensational, and environmental stimuli.

In light of this gap, the purpose of this research was to look into the interrelationships between sleep quality, mindfulness, and overall quality of life. It's important to remember that quality of life is made up of three elements: physical health, emotions, and social interactions. The first goal of this study was to determine the level of sleep quality and overall quality of life. Second, it looked into the link between sleep quality and overall quality of life, focusing on the domains of physical health, emotions, and social interactions. Its third goal was to assess the link between mindfulness and life satisfaction. This study is significant especially to undergraduate students as academic demands may elicit new challenges for them to manage personal and social development and therefore increase the risk of low quality of life.

II. LITERATURE REVIEW

A. The Relationship between Sleep Quality and Quality of Life

Reference [10] measured the sleep quality of a sample of undergraduate students and compare it to the recommendations for young adults from the National Sleep Foundation (NFS). A poll was used to recruit 86 undergraduate students from a mid-sized public university in the Southeast for this study. The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate the students' sleep quality. Their findings showed that most students did not get minimum amount of sleep as recommended by the NFS as they have varied class times, demanding work schedules, and busy social lives which lead sleep to a low priority for students. Sleep has been demonstrated to play a critical role in immunological function, metabolism, memory, learning, and other key activities in studies. While a lack of sleep can have a negative impact on mood, learning and memory, as well as overall well-being.

Reference [11] examined whether poor sleep quality influenced emotional reactivity to daily events since sleep disorder has been correlated to poor emotional functioning in healthy and depressed individuals. 60 participants with major or minor unipolar depressive disorders and 35 participants of healthy individual controls were included in this study by using computerised Experience Sampling Method (ESM). The ESM is a method of studying what individuals do, feel, and think in their everyday lives. It asks one person to fill up self-reports about random events that occurred at the time [12]. The subjects were chosen through advertisements put across the Tampa region, and they had to meet DSM-IV diagnostic criteria for mood depressive disorder. Their findings revealed that sleep problems were linked to an increased negative response to unpleasant experiences and a blunted response to neutral situations in healthy people. Sleep problems, on the other hand, were linked to higher negative affect in mood-disordered people across all sorts of everyday life events. As a result, poor sleep quality affects everyday living and emotional reactions differently as a function of depression.

In the meantime, [13] explored the prevalence of sleep disorders, their sociodemographic and clinical correlates, and quality of life in older persons aged 50 and up. Sleep disruptions include difficulty falling asleep, staying asleep, and waking up early in the morning. It's also linked to problems concentrating, paying attention, and remembering things, as well as an increased risk of chronic medical and psychological diseases, a poor quality of life, frequent pharmaceutical prescriptions, and a higher cost of health care. A number of surveys have been carried out in Macao, China in which 451 subjects were interviewed using standardized instruments. Female gender, living alone, low education and income, unemployment, stressful life events, and medical and psychiatric disorders are all often recognised risk factors for sleep disturbance in old adults in Western countries. As a result, they looked into the link between sleep disruptions and quality of life in Macao, which is renowned as the world's most densely inhabited region. Their study included both community-dwelling elderly persons and nursing home residents. The quality-of-life scale has grown in importance as a means of gaining a better understanding of a population's health. During this time, they discovered that sleep problems are connected with poor physical health and a reduced quality of life among older persons in Macao.

The link between sleep disturbance and sadness, anxiety, and functioning in college students was investigated in [14]. There were 287 undergraduate students with depression symptoms who completed the Beck Depression Inventory (BDI) and self-report measures such as the Quality-of-Life Enjoyment and Satisfaction Questionnaire (QLESQ). The BDI sleep item, on the other hand, was used to quantify Sleep Disturbances (SD). The data revealed no significant differences in depression intensity, despair, or quality of life between students with and without SD. In comparison to students with depressive symptoms without SD, students with depressive symptoms with SD had a higher load of anxiety symptoms and hyper arousal, as well as functional impairments. As a result, empirical investigations have demonstrated that sleep deprivation causes the study's sample to score neutral stimuli much lower than individuals who are well rested. However, another research revealed that sleep loss had no effect on subjective emotion in all measures of emotional reaction to stimuli when the stimuli are shown for the second time or when they occur frequently following the first presentation [15].

B. The Relationship between Mindfulness and Quality of Life

Reference [8] has explored the impact of a seven-week mindfulness-based relaxation course on stress resilience, general self-efficacy, and perfectionism in undergraduate students. Around 71 undergraduate college students were included in this study range ages 18 to 40 years old. The changes period for young adult coexists with college life which is often related to many challenges including academic pressures, interpersonal distress, homesickness, loneliness, isolation, financial burdens, managing novel freedoms and experiencing life as an adult. As a result, the findings revealed that a student's inability to successfully cope with the obstacles of college life can result in a variety of negative outcomes, such as elevated stress levels, which can harm a student's health and overall well-being. As a result, this study suggested the use of mindfulness treatments as part of academic curriculum as a possible strategy to improve pupils.

The benefits of Mindfulness-Based Interventions for health and social care among undergraduate students were explored in [16]. They want to identify and clarify the literature on the impacts of Mindfulness-Based Interventions for health and social care among undergraduate students, therefore they're doing a systematic review of the literature. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria were used to conduct the review. From the beginning to the 21st of November 2016, PubMed, EMBASE, Psych Info, CINAHL, The Cochrane Library, and Academic Search Complete were searched. Additionally, hand searching relevant journals, reviewing paper reference lists, and contacting authors in the area were also used as search approaches. Participants' stress, mood, anxiety, well-being, self-compassion, and coping capacities have all been shown to benefit by mindfulness. The review highlights the significant short-term benefits that Mindfulness-Based Interventions could improve undergraduate student's moods and well-being.

In the meanwhile, [17] intended to compare the quality of life and health outcomes of those who are more attentive and thankful against those who are not. 1315 male soldiers participated in the study, which included standardised mindfulness (MAAS), gratitude (CQ-6), general health, life satisfaction, and quality of life questionnaires. Individuals in the high mindfulness, medium mindfulness, and low mindfulness groups, as well as those in the high gratitude, medium gratitude, and low gratitude groups, exhibited significant differences in quality of life, life satisfaction, perceived stress, and mental health. In conclusion, the findings of these studies revealed that people who are more attentive and thankful have a higher quality of life and are more physically and psychologically well.

Reference [18] studied the impact of developmental changes on the lives of young adults and the high prevalence of mental health concerns among college students in the United States. This study looked at the effectiveness and feasibility of mindfulness training as a way to improve the health and well-being of first-year college students. A total of 109 freshmen were recruited, with 50% of them being male and 66% being female. The method used is a randomized control trial in which the universal mindfulness program that emphasize on learning to breathe or known as Learning to BREATHE (L2B) program was utilized. Each intervention was linked to a large increase in student life satisfaction and a significant decrease in despair and anxiety, according to the findings. As a result, mindfulness-based programmes proved to be an excellent technique for promoting a healthy transition into college life.

Reference [19] also established an empirical study that demonstrated mindfulness is understood as a present-centered, non-evaluative state of consciousness. This type of awareness is regarded to have inherent significance in developing positive mental health and adaptation through the modification of distorted thinking. The most prevalent portrayal of Buddhism is as a psychology that is similar to cognitive psychology and mindfulness. Whereas, Buddhism in the societies is much related to spiritual activities. Therefore, according to [20], spiritual health of teenagers is crucial for their mental health and well-being. Since spiritual intelligence may influence their social behaviours or relations which is one of the main factors of quality of life.

III. METHODOLOGY

A. Participants

A total of 139 respondents who were undergraduate students at a public university in Malaysia have participated as sample respondents. In terms of gender, the samples consisted of 66.2% females and 33.8% males and their age ranging from 19 to 26 years old. In addition, the sample comprised students from various faculties which were Faculty of Arts, Computing and Creative Industries, Faculty of Science and Mathematics, Faculty of Management and Economics, Faculty of Sports Science and Coaching, Faculty of Music and Performing Arts, Faculty of Languages and Communication, Faculty of Social Sciences and Humanities, Faculty of Technical and Vocational Education, Faculty of Human Development. It is worth noting that the respondents were from Malay, Chinese and Indian ethnic.

B. Procedures

Online survey was employed for this study. The respondents were chosen using a convenience sampling method in which they were directly contacted via social media. Facebook, WhatsApp, and Telegram were the social media platforms used. All responders were contacted by researchers through acquaintances from various faculties. They were given the option of responding to the survey at their leisure. The participants agreed to the inform consent when responding to the online survey. Later, the data were analysed using SPSS software.

C. Measures

➢ *Sleep Quality*

The Pittsburgh Sleep Quality Index (PSQI) scores were used to assess sleep quality (PSQI), developed by [21]. The PSQI is a 20-item self-report questionnaire that is broken down into seven component scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disruptions, use of sleeping medication, daytime dysfunction, and total sleep quality rating. Items 6 through 18 are scored on a five-point scale. Item 19 uses a 5-point Likert scale ranging from 1-No problem at all to 5-Almost all problem on a Likert

scale ranging from 1-Never to 5-Four times or more a month. Finally, item 20 uses a 5-point Likert scale ranging from 1-Very good to 5-Very awful to assess overall sleep quality. The total of all seven components' scores equals one global score [22]. Higher scores imply poorer sleep quality. The global score ranges from 0 to 35.

➢ *Mindfulness*

The participants also completed the Mindful Attention Awareness Scale (MAAS), which was developed by [5] and assesses a core feature of mindfulness in one's attention to current-moment experiences. It has 15 items, each of which requires a response on a 6-point Likert scale ranging from 'nearly always' to 'almost never.' The items are divided into five categories: cognitive, emotional, physical, interpersonal, and general domains [5]. The total score of the 15 items shows an individual's level of mindfulness, with a high score reflecting dispositional mindfulness and a low score reflecting the respondent's level of mindlessness. Respondents must, however, answer according to what truly reflects their experience rather than what they believe their experience should be in order to achieve socially desired responses.

➢ *Quality of Life*

Reference [23] developed the Quality-of-Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q), which is a 93-item scale self-reported questionnaire. All items are graded on a 5-point Likert scale, with 1 being "not at all" or "never" and 5 being "often" or "all of the time." The measure is broken down into eight subscales: physical health, subjective feelings, work, household obligations, school, leisure activities, social interactions, and general activities [24]. In this study, however, only the categories of physical health, subjective sentiments, and social interactions were chosen to meet the college students' setting. There are 41 items in these three domains. All items are graded on a 5-point Likert scale, with 1 being "not at all or never" and 5 being "frequently or all of the time." As a result, a total score is calculated based on the three dimensions chosen, with a maximum score of 15. The higher the score, the more satisfied and delighted you are with your life.

IV. RESULTS

A. The Level of Sleep Quality

The Seven dimensions of sleep quality were measured; sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, daytime dysfunction [21]. Each dimension scale differs according to its measurement. Majority of the respondents (32.4%) scored neither good or bad for subjective sleep quality. With regard to sleep latency, majority of the respondents (36.7%.) scored 'fairly good'. Besides, 33.8% of the participants sleep around 7 to 8 hours and only 3.6% of them who sleep less than 5 hours per day.

For habitual sleep efficiency, 62.6% respondents scored on 'more than 85%' and only 4.3% of them scored 'less than 55%'. With regard to sleep disturbance, 46% of the respondents experience it 'once a month'. The majority of people (77.7%) say they never use sleep medicine. Meanwhile, 43.9% of the respondents experienced 'only a very slight problem' for daytime dysfunction. The descriptive analysis of the scores of the Pittsburgh Sleep Quality Index (PSQI) according to its dimensions - sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, daytime dysfunction [21] - is shown in Table 1.

TABLE I. DESCRIPTIVE ANALYSIS ON THE DIMENSION SCORES OF PITTSBURGH SLEEP QUALITY INDEX (PSQI)

Dimensions	Scale	Percentage (%)
Subjective sleep quality	Very Good	5.0
	Fairly Good	26.6
	Neither Good or Bad	32.4
	Fairly Bad	26.6
	Very Bad	9.4
Sleep latency	Very Good	5.8
	Fairly Good	36.7
	Neither Good or Bad	23.0
	Fairly Bad	26.6
	Very Bad	7.9
Sleep duration	More than 8 hours	27.3
	7 hours to 8 hours	33.8
	6 hours to 7 hours	28.8
	5 hours to 6 hours	6.5
	Less than 5 hours	3.6
Habitual sleep efficiency	More than 85%	62.6
	75% to 84%	10.8
	65% to 74%	12.9
	55% to 64%	9.4
	Less than 55%	4.3
Sleep disturbance	Never	26.6
	Once a month	46.0
	Twice a month	17.3
	Three times a month	9.4
	Four times or more a month	0.7
Use of sleep medication	Never	77.7
	Once a month	7.9
	Twice a month	4.3
	Three times a month	5.0
	Four times or more a month	5.0
Daytime dysfunction	No problem at all	25.2
	Only a very slight problem	43.9
	Somewhat of a problem	22.3
	Very much problem	5.8
	Almost of all problem	2.9

B. The Level of Quality of Life

Table 2 shows the descriptive analysis on the dimensions of quality of life particularly quality of physical health, feelings and social relationships. Most students scored mostly on either good or bad for physical health with 44.6% (n=62). While most

students scored on fairly bad for feelings with 46.8% (n=65) and for social relations most students scored on fairly bad with 48.2% (n=67).

TABLE II. DESCRIPTIVE ANALYSIS ON THREE DIMENSIONS OF QUALITY OF LIFE

Dimensions	Scores	Percentage (%)
Physical Health	Very Good	2.9
	Fairly Good	34.5
	Neither Good or Bad	44.6
	Fairly Bad	15.8
	Very Bad	2.2
Feelings	Very Good	2.2
	Fairly Good	8.6
	Neither Good or Bad	32.4
	Fairly Bad	46.8
	Very Bad	10.1
Social Relations	Very Good	0.7
	Fairly Good	9.4
	Neither Good or Bad	30.2
	Fairly Bad	48.2
	Very Bad	11.5

C. *The Level of Mindfulness*

The descriptive analysis on the scores of the second independent variable, the Mindful Attention Awareness Scale (MAAS), is shown in Table 3. The average score was calculated to determine an individual's level of mindfulness. The majority of respondents (61.2%) reported having a moderate level of mindfulness.

TABLE III. DESCRIPTIVE ANALYSIS ON THE SCORES OF MINDFULNESS

Level	Percentage (%)
Low	10.1
Moderate	61.2
High	28.2

D. *The Relationship between Sleep Quality, Mindfulness and Quality of Life*

Pearson's product-moment correlation coefficient was used to examine the association between sleep quality, mindfulness, and quality of life. Quality of life consists of three domains; quality of physical health, feelings and social relations.

There was a significant positive correlation between sleep quality and physical health quality (r=.213, p = 0.012). Likewise, there was also a significant positive correlation between sleep quality and quality of feelings (r= .199, p=.019). There was also a positive correlation between sleep quality and social relations quality, nonetheless, the correlation was not significant (r=.107, p=.208). Henceforth, as sleep quality improves, physical health improves as well. Similarly, as the quality of sleep improves, so does the contentment with feelings.

Results also showed that there was a significant positive correlation between mindfulness and all components of quality of life. The correlation between mindfulness and quality of physical health was r=.294, p=0.00. Meanwhile, the correlation between mindfulness and feelings was r=.301, p=.00, and the correlation between mindfulness and social relations was r=.217, p=.010). Therefore, the obtained results showed that if the mindfulness increases, the quality of life specifically quality of physical health, feelings and social relations will also increase. The correlation analyses between sleep quality, mindfulness, and quality of life are shown in Table 4.

TABLE IV. CORRELATION ANALYSES BETWEEN SLEEP QUALITY, MINDFULNESS AND QUALITY OF LIFE

Variables	1	2	3	4	5
Sleep quality	-				
Mindfulness	.040	-			
Quality of physical health	.213*	.294**	-		
Quality of feelings	.199*	.301**	.847**	-	
Quality of social relations	.107	.217*	.661**	.772**	-

[a]Note: *p<0.05, **p<0.01 at .05 alpha level

V. DISCUSSION

There was a significant positive association between sleep quality and physical health quality, according to the findings. Similarly, there was a significant relationship between sleep quality and moods. Despite this, there was no relationship between sleep quality and the quality of social relationships. These results were found to be in line with the past researches that studied the presence of sleep quality and quality of life specifically satisfaction with physical health and emotion. Reference [14], for example, looked into the relationship between sleep disruption and sadness, anxiety, and functioning in college students. Students with depressive symptoms and sleep disruptions had a higher burden of anxiety symptoms and hyper arousal, as well as functional impairments, according to the data. Meanwhile, results from descriptive analysis also showed that majority of the respondents (46%) indicated that they were having sleep disturbance once a month. Majority of them (46.8%) also indicated that they experienced ‘fairly bad’ for satisfaction with feelings.

Reference [10] measured the sleep quality among a sample of undergraduate students and compare it to the recommendations for young adults from the National Sleep Foundation (NFS). Their findings revealed that the majority of students did not obtain the minimal amount of sleep advised by the National Sleep Foundation (NFS) as the results indicated that sleep was most importance role in immune function, metabolism, memory, learning, and other vital functions. While, a lack of ample sleep can affect mood, the ability to learn and retain information as well as poor overall well-being. According to [11], poor sleep quality has a distinct impact on daily living and emotional emotions. They discovered that sleep disturbances were linked to emotional reactivity in healthy people. Emotional reactions amplified the negative impact of unpleasant experiences and diminished the response

to neutral occurrences. Sleep problems, on the other hand, were linked to higher negative affect in mood-disordered people across all sorts of everyday life events. Reference [13] concluded that sleep disturbance was independently related with depressive symptoms as well as physical health of quality of life and are common in older adults in Macao.

Meanwhile, results also showed that there was a significant positive relationship between mindfulness and all domains of quality of life particularly satisfaction with feelings, social relationships and physical health. Thus, from the obtained result, it can be inferred that when the level of mindfulness increases, the quality of life will also increase. This study's findings were in line with those of [17], who discovered that those with more thoughtful and thankful features have a higher quality of life and better physical and psychological well-being. Furthermore, [18] discovered that exercising mindfulness boosts students' life satisfaction while also reducing despair and anxiety. Furthermore, [8] also supported that practicing mindfulness can be part of academic curriculum since it can benefit the students in terms of improving students' health and overall well-being.

VI. IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

A. Implications of the Study

The present study showed that sleep quality and mindfulness significantly related with quality of life, specifically with all of its domains; quality of physical health, feelings and social relations. The practise of mindfulness is said to improve human well-being and health. According to reference [25], mindfulness theory is an open-minded approach that can keep people actively involved in the process of learning new environmental distinctions. Thoughtful responses lead to increased competence, health, positive emotion, creativity, and less burnout; in contrast, mindless mind could result in make one individuals to act routinely without being aware with the environment. Furthermore, automatic answers can convey a misleading sense of security and confidence. Thus, there is no doubt that current researchers recommend to utilize mindfulness intervention such as mindfulness-based program as a part of academic curriculum to benefit the students [8].

Mindfulness is thought to increase well-being, according to reference [5]. A higher mindfulness score suggests that people are more aware of and responsive to inner experiences, as well as more conscious of what they do. As a result, increased mindfulness may make people more "in tune" with their emotional states and able to change them, and they are more likely to meet their basic psychological needs because they are more aware of themselves. Mindfulness, according to the researchers, enhances attunement, connection, and intimacy in relationships because people have a stronger ability or inclination to care about their partners' thoughts, emotions, and well-being. It may also improve a person's capacity to pay attention to the content of a partner's communication as well as their awareness of the partner's affective tone and nonverbal behaviour, since such persons become more aware to their own cognitive, emotional, and verbal responses to the communication [9].

B. Limitations and Recommendations for Future Research

The researchers discovered a few constraints when doing this investigation. First, the sample size was insufficient, particularly among male students. At first, the researchers wanted to have equal sample size from male and female undergraduates in order to find significant difference in gender with regard to quality of life. However, the sample size for each gender was not equal as the sample of this study consisted of 66.2% female and 33.8% male undergraduates. The respondents also came from one public university only, hence, making a generalisation of this result might not be suitable. Meanwhile, due to time constraint, the self-report measure of sleep quality particularly Likert-style rating of (the last month's) sleep quality, was used as the primary sleep quality indicator for this research.

Other possible objective measures of sleep quality, such as polysomnography, cyclic alternating pattern, and actigraphy, should be used in future study in addition to the self-report measure of sleep quality [26]. A bigger sample size incorporates respondents from various universities in Malaysia is recommended as it can result in generalisation of the research findings across the country. Similar research also shall be conducted for other population groups such as working adults, school teenagers or elderly citizens to add another contribution to the body of knowledge on quality of life.

VII. CONCLUSION

This study aimed to find significant relationship between sleep quality and quality of life as well as the relationship between mindfulness and quality of life among undergraduate students in Malaysia. It was done using a survey that used self-reported sleep quality, mindfulness, and quality of life measurements. In this study, quantitative data analysis, specifically Pearson Correlation analysis, was used. The data revealed that there was a relationship between sleep quality and overall quality of life. Likewise, a significant relationship was also found between mindfulness and quality of life. Therefore, it can be concluded that students who have high level of mindfulness and have a high sleep quality score would have a better quality of life, particularly in terms of physical health, emotions and social relations.

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