



UNIVERSITI PUTRA MALAYSIA

***A CROSS SECTIONAL STUDY: ASSOCIATION BETWEEN PHYSICAL
ACTIVITIES AND HEALTH-RELATED QUALITY OF LIFE AMONG
UNDERGRADUATE STUDENTS IN PUBLIC UNIVERSITY IN MALAYSIA.***

NABILA NURAINA BINTI NORAZLEE

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NABILA NURAINA BINTI NORAZLEE

DEPARTMENT OF NURSING

FACULTY OF MEDICINE AND HEALTH SCIENCES

UNIVERSITI PUTRA MALAYSIA

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BY

NABILA NURAINA BINTI NORAZLEE

**Thesis submitted in fulfilment of the requirement for the degree of Bachelor of
Nursing from Faculty of Medicine and Health Sciences, Universiti Putra Malaysia.**

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ABSTRACT
**A CROSS SECTIONAL STUDY ON THE ASSOCIATION BETWEEN
PHYSICAL ACTIVITIES AND HEALTH-RELATED QUALITY OF LIFE AMONG
UNDERGRADUATE STUDENTS IN PUBLIC UNIVERSITY IN MALAYSIA.**

Nabila Nuraina Norazlee, Siti Aishah Hamzah

*Department of Nursing, Faculty of Medicine and Health Sciences, Universiti
Putra Malaysia*

Background: Practicing healthy lifestyle are important as is can contribute to a good state of mental and physical health. However, there are certain number of students that still practicing a sedentary lifestyle. Thus, this research aims to find the relationship between physical activity with health-related quality of life with the influence of other factors. **Objective:** To determine the association of physical activity and health-related quality of life and the influence of participant characteristics among undergraduate students in public university in Malaysia. **Method:** A cross-sectional study involved 244 participants by using International Physical Activity Questionnaire (IPAQ) and The 36-Item Short Form Health Survey Questionnaire (SF-36). For descriptive analysis, mean, standard deviation, frequency and percentage were used. To determine the relationship between physical activity and health-related quality of life, One-Way Independent Annova were used. **Result:** Majority of the respondent were female (n=184, 75.4%). The data shows that 56.6% of the respondents were having a moderate level of physical activity (n=138), while 25.8% (n=63) of them were having a low level of physical activity and only 17.6% (n=43) of them were having a high level of physical. The mean \pm standard deviation for physical functioning, physical role, emotional role, vitality, mental health, bodily pain, social functioning and general health score are 84.61 ± 18.94 , 69.26 ± 36.75 , 60.92 ± 41.38 , 48.68 ± 17.26 , 57.55 ± 15.80 , 69.68 ± 19.72 , 64.21 ± 21.29 and 66.35 ± 17.214 respectively. The relationship between level of physical activity with vitality (VT) and mental health (MH) were significant at *p-value* 0.04 for both. **Conclusion:** This study shows the sociodemographic factors that affect physical activity (PA) and health-related quality of life (HRQoL) among university students and provide the baseline data for the university authorities to improve the health education among their students.

Keyword: Physical activity, health-related quality of life, undergraduates.

ABSTRAK

KAJIAN RENTAS: HUBUNGAN ANTARA FIZIKAL AKTIVITI DENGAN KUALITI HIDUP BERKAITAN DENGAN KESIHATAN ANTARA PELAJAR SARJANA MUDA DI UNIVERSITI AWAM DI MALAYSIA.

Nabila Nuraina Norazlee, Siti Aishah Hamzah

Jabatan Kejururawatan, Fakulti Perubatan dan Sains Kesihatan, Universiti Putra Malaysia

Latar belakang: Mempraktikkan gaya hidup sihat adalah penting kerana dapat menyumbang kepada kesihatan mental dan fizikal yang baik. Walau bagaimanapun, terdapat sebilangan pelajar yang masih mengamalkan gaya hidup yang tidak aktif. Oleh itu, penyelidikan ini bertujuan untuk mengetahui hubungan antara aktiviti fizikal dengan kualiti hidup yang berkaitan dengan kesihatan dengan pengaruh faktor-faktor lain. **Objektif:** Untuk menentukan perkaitan aktiviti fizikal dan kualiti hidup yang berkaitan dengan kesihatan dan pengaruh ciri-ciri peserta dalam kalangan pelajar sarjana di universiti awam di Malaysia. **Kaedah:** Kajian keratan rentas melibatkan 244 peserta dengan menggunakan International Physical Activity Questionnaire (IPAQ) dan The 36-Item Short Form Health Survey Questionnaire (SF-36). Untuk analisis deskriptif, min, sisihan piawai, frekuensi dan peratusan digunakan. Untuk menentukan hubungan antara aktiviti fizikal dan kualiti hidup yang berkaitan dengan kesihatan, Oneova Way Independent Annova digunakan. **Hasil:** Majoriti responden adalah wanita ($n = 184, 75.4\%$). Data menunjukkan bahawa 56.6% responden mempunyai tahap aktiviti fizikal yang sederhana ($n = 138$), manakala 25.8% ($n = 63$) dari mereka mempunyai tahap aktiviti fizikal yang rendah dan hanya 17.6% ($n = 43$) dari mereka mempunyai tahap fizikal yang tinggi Purata \pm sisihan piawai untuk fungsi fizikal, peranan fizikal, peranan emosi, daya hidup, kesihatan mental, sakit badan, fungsi sosial dan skor kesihatan umum adalah $84.61 \pm 18.94, 69.26 \pm 36.75, 60.92 \pm 41.38, 48.68 \pm 17.26, 57.55 \pm 15.80, 69.68 \pm 19.72, 64.21 \pm 21.29$ dan 66.35 ± 17.214 . Hubungan antara tahap aktiviti fizikal dengan daya hidup (VT) dan kesihatan mental (MH) adalah signifikan pada nilai $p < 0.04$ untuk kedua-duanya. **Kesimpulan:** Kajian ini menunjukkan faktor sosiodemografi yang mempengaruhi aktiviti fizikal (PA) dan kualiti hidup yang berkaitan dengan kesihatan (HRQoL) di kalangan pelajar universiti dan memberikan data asas bagi pihak berkuasa universiti untuk meningkatkan pendidikan kesihatan di kalangan pelajar mereka.

Kata kunci: Aktiviti fizikal, kualiti hidup yang berkaitan dengan kesihatan, pelajar sarjana.

DECLARATION BY STUDENTS

I hereby confirm that:

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Date: 23/9/2021

Name and Matric No: Nabila Nuraina binti Norazlee, 192948

DECLARATION BY MEMBERS OF SUPERVISORY COMMITTEE

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) are adhered to.

PUAN SITI AISHAH BINTI HAMZAH

Supervisor

Department of Nursing

Faculty of Medicine and Health Sciences

Universiti Putra Malaysia

Date: 23/9/2021.....

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LIST OF ABBREVIATION

	Abbreviation
BMI	Body Mass Index
HRQOL	Health-related quality of life
CGPA	Cumulative Grade Point Average
PA	Physical Activity
IPAQ	International Physical Activity Questionnaire
SF-36	The 36-Item Short Form Survey
COVID19	Corona Virus Disease 2019
PF	Physical function
RP	Role limitation due to physical health
RE	Role limitation due to emotional problem
VT	Energy/Fatigue
MH	Mental Well-being
BP	Bodily pain
SF	Social functioning
GH	General health
MET	Metabolic Equivalents

CHAPTER 1

INTRODUCTION

1.1 Background of study

WHO defined physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling and engaging in recreational pursuits. It is recommended to do at least 150 minutes of moderate-intensity physical activity throughout the week or do at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity for an adult.

This study aims to find the relationship between the physical activity (PA) and health-related quality of life (HRQOL) among undergraduate students in public universities. Not only in adults, assessment of HRQOL among children and adolescents also important. Significance of HRQoL assessment in children and adolescents arises from its capability to identify at risk individuals, detect health inequalities and act as a basis for evaluating adulthood HRQoL (Motamed-Gorji et al., 2019).

Physical activity is one the component in practicing a healthy lifestyle. Physical activity is considered to be a positive health measure (Nowak et al., 2019). Meanwhile,

health-related quality of life are one of the aspects in quality of life. World Health Organization define Health-related Quality of Life as a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning. It goes beyond direct measures of population health, life expectancy, and causes of death, and focuses on the impact health status has on quality of life. So, this study is conducted to know the impact of physical activity to quality of life related to health only.

Furthermore, PA associated with several aspects of quality of life (QoL) and PA is found to be an important means of increasing QoL (Çiçek, 2018). In addition, according to a large number of publications, being regularly active improves the quality and length of life (Franco Noce et al., 2016).

1.2 Problem statement

As a student, the most concern that usually happened are the presence of stress and anxiety. During their academic life, university students face various problems such as irregular sleeping, financial stress, living away from home, academic pressure, depression which have a negative influence on their academic performance (Kayani et al., 2020). Somehow, these factors could lead to stress and anxiety which will affect the student health related quality of life. There is a study shown that physical activity could help in reducing anxiety and stress. According to Rahman et al., (2020) physical activity helps in preventing depression and improves someone mental health status.

However, physical activity levels decline as adolescents make the transition into adulthood. Furthermore, males entering university education may be most at risk from sharp declines in physical activity compared with those not continuing in education (Murphy et al., 2018). This is might due to time constraints and full of classes. This will lead to the increasing of stress level among university students.

In addition, inactivity is more common among women than men and this tendency increases with age. Up to one third of adults and four fifths of the youth do not achieve the recommended level of physical activity (Nowak et al., 2019). A meta- analysis has highlighted that 40% to 50% of college students are physically inactive (Murphy et al., 2018). Indeed, physically inactive has been practised by university's student right now, but

we do not know whether the same problems is happening in students among public university in Malaysia.

In a local context, there is a study done among student of Management and Science University by Al-Naggar et al., (2013), the result shown that majority of the students are never exercise which contributes about 53.7%. There was also a study done among students of Asia Metropolitan University (AMU) in Malaysia. This study found that there is a difference in physical activity level between the ages. Students at the age range of 22-25 demonstrated the highest level of physical inactivity compared with students in an age range of 18-21 and 26-30 (Karthikeyan et al., 2015). However, it is suggested that motivation affects the duration of PA; therefore, more people will engage in exercise for longer durations when their motivation increased (Kuan et al., 2019).

For this reason, a study will be conducted to investigate the relationship between physical activity with health-related quality of life among undergraduate student in public university in Malaysia. Physical activity (PA) is also positively related to risk factors for numerous chronic diseases and physical and mental health-related quality of life (HRQL) (Herman et al., 2012). Therefore, this study is conducted on public university students to determine their perception on health-related quality of life that associated with physical activity that they had practiced; also to find the influence of socio-demographic factors and health-related characteristics that is the lead of the problem arising.

1.3 Significant of study

This study contributes benefits to the institution and the students itself. This study allows the authorities of the university to know the level of exposure of its students towards sedentary lifestyle issues which is one of the serious issues among university students worldwide. Furthermore, examining HRQOL in 18- to 24-year-olds is important because HRQOL can indicate risk for suicide, the third leading cause of death for young people 18–24 years of age (Vernon-smiley et al., 2007). The survey also give benefit the student where they would be more exposed to the importance of being physically active in spite of their busy schedule. This study also allows the students to know the association between physical activity and health-related quality of life.

For nursing context, it can give the awareness about the way to promote healthy lifestyle which is by practicing adequate physical activities. By having the awareness, nurses can educate the community about what is healthy lifestyle and also play an important role in distribute the healthy lifestyle information. As agreed, according to Geok et al., (2015), when the practitioner has personally grasped physical activity as their everyday routine, he or she is more likely to empower patients to do likewise to improve their wellbeing. Thus, this study gives an impact to university's authorities, students and nursing context.

1.4 Research questions

- i. What is the association between the physical activity and health-related quality of life among undergraduate students in public university in Malaysia?
- ii. Does participant characteristics affect the physical activity among undergraduate students in public university in Malaysia?
- iii. Does participant characteristics affect the health-related quality of life among undergraduate students in public university in Malaysia?

1.5 Research objectives

1.5.1 General objectives

To determine the association of physical activity and health-related quality of life and the influence of participant characteristics on the association among undergraduate students in public university in Malaysia.

1.5.2 Specific objectives

- i. To determine the participant characteristic which consist of sociodemographic data and health characteristics of undergraduate students in public university in Malaysia
- ii. To determine the level of physical activity of undergraduate students in public university in Malaysia
- iii. To determine the health-related quality of life based on its domain of undergraduate students in public university in Malaysia.
- iv. To determine the association between participant characteristics and physical activity among undergraduate students in public university in Malaysia.
- v. To determine the association between participant characteristics and health-related quality of life among undergraduate students in public university in Malaysia.
- vi. To determine the association between physical activity and health-related quality of life among undergraduate students in public university in Malaysia.

1.6 Hypothesis

1.6.1 Null hypothesis

H₀: There is no significant association between physical activity and health-related quality of life among undergraduate students in public university in Malaysia at p-value above 0.05.

1.6.2 Alternative hypothesis

H₁: There is significance association between physical activity and health-related quality of life among undergraduate students in public university in Malaysia at p-value of or below 0.05.

1.7 Variables

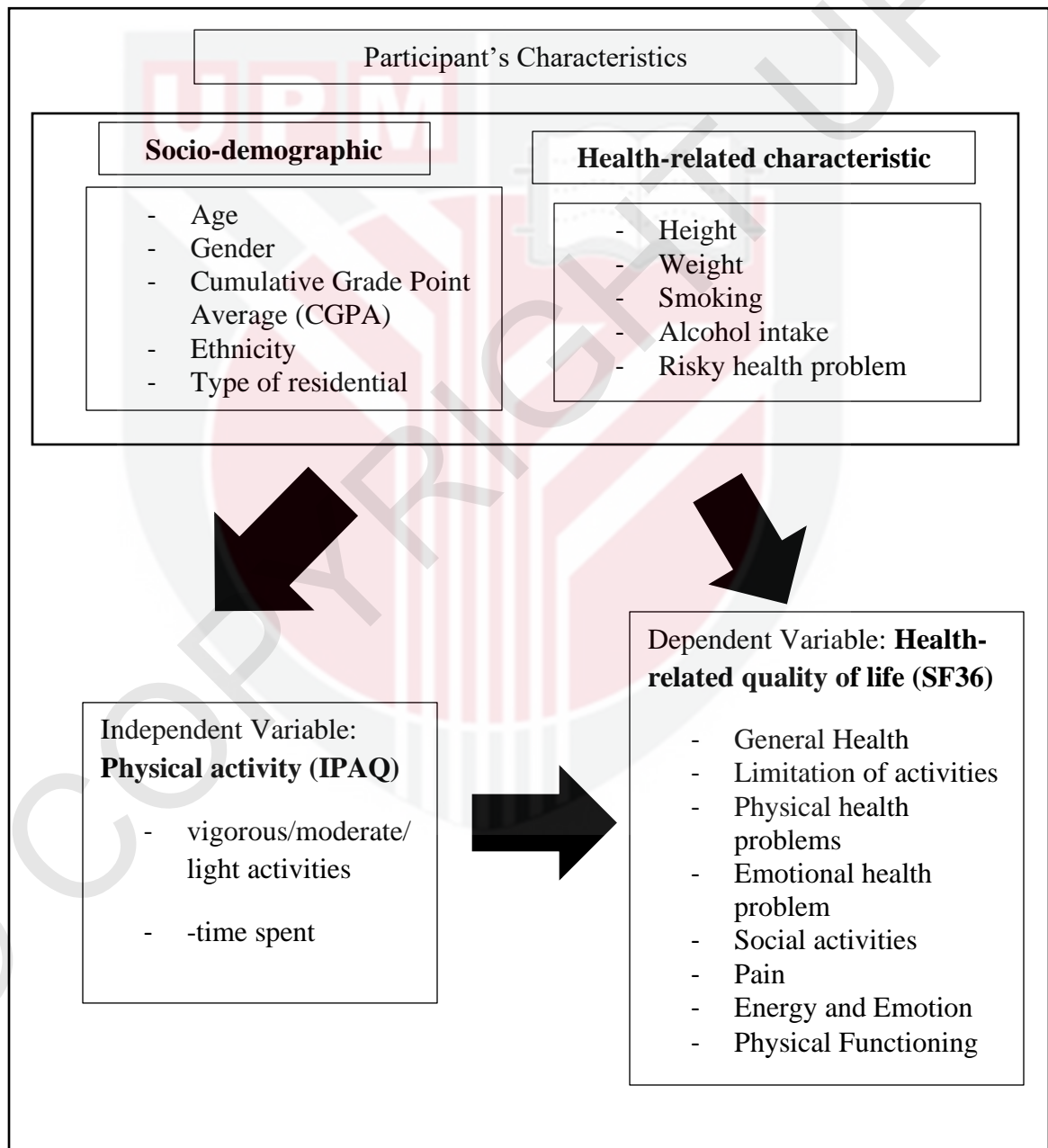
Independent variable: Physical activity (PA)

Dependent variable: Health-related quality of life (HRQOL)

1.8 Conceptual framework

Diagrammatic illustration of the study framework which provides a context to explain the study finding.

Figure 1: The conceptual framework of relationship between physical activity and health-related quality of life among undergraduate student in public university Malaysia.



The demographic data were collected from 384 undergraduate students from 9 selected public university in Malaysia including age, gender, type of residential, Cumulative Grade Point Average (CGPA) and ethnicity. This cross-sectional study was conducted by using two questionnaires which were International Physical Activity Questionnaire (short version) and the 36-Item Short Form Health Survey questionnaire (SF-36) together with the demographical data that been mentioned previously. All participants received an assessment questionnaire through electronic media such as WhatsApp since now our country are having pandemic disease which will affect the physical contact to conduct the survey with the participants.

1.9 Definition of the term

i. Physical activity

Physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure (WHO,2020). In this study, physical activity is defined as any movement, including leisure time done by a student.

ii. Health-related quality of life

Health-related quality of life (HRQoL) is a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning. It goes beyond direct measures of population health, life expectancy, and causes of death, and focuses on the impact health status has on quality of life. In this study, health-related quality of life refers to undergraduate student's perception about their physical and mental health.

iii. Undergraduate

Undergraduates are students of universities and colleges where they have graduated from high school and have been accepted to college, but they haven't graduated yet. In this study, undergraduate students refer to all public university students who is currently doing his bachelor or degree in the college or university. However, only undergraduate students that came from 9 selected universities were involved.

CHAPTER 2

LITERATURE REVIEW

2.1 Physical activity practices

It cannot be denied that promoting healthy lifestyle nowadays are very challenging especially in promoting physical activity practice in an individual level. Noce et al., (2016) stated that physically inactive has been one of the major public health concerns and it may due to the technologies dependency which can diminish the body's energy consumption during daily activities. They also believed that mental health and quality of life can be improved by practicing a physical activity.

WHO (2018) defined physical activity as any of body movement produced by skeletal muscle that require energy consumption which include doing chores, travelling and working and it should not be with exercise as they are two different aspect. Meanwhile, the person who is physically inactive is not same as a person who is practicing a sedentary activity. According to Rahman et al., (2020) sedentary activity is defined as any waking behavior which can be characterized by any energy consumption not more than 1.5 metabolic equivalents (METs), such as sitting or reclining position. However, practicing sedentary lifestyle also contributes to a few health problems. Sedentary lifestyle increases the risk of developing many health conditions particularly cardiovascular diseases, hypertension, type 2 diabetes mellitus, colon and breast cancers, osteoporosis, depression, and backaches (Bize et al., 2007). An individual is considered sedentary if he or she is

inactive or does not achieve moderate or intense levels of physical activity (Franco Noce et al., 2016).

For working adult, a study was done to explore their physical activity practice at work. As a result, Full-time workers who reported mostly sitting at work sat for 6.3 ± 1.8 half day at work, on average, while those who reported mostly standing, walking or heavy labor had mean sitting times of 1.5 ± 1.7 h/day, 1.6 ± 1.4 half day and 1.2 ± 1.2 half day at work, respectively (Chau et al., 2012). While in adolescent population, Asare & Danquah, (2015) discovered that nearly half of the participants (44.3%) in their study had low physical activity practice, where females are mostly being physically inactive than males which 55.0% and 45.0% respectively. There was a study done too among elderly by Fu et al., (2018), which discovered 29.1% from 352 participants were physically inactive. By these finding, it was strongly show that physical activity nowadays are not being practice even though there are many benefits from it.

2.2 Advantage of physical activity practice

Being active in physical activity brings advantages to our physical state. This statement is supported by Rahman et al., (2020) by stated that physical activity brings good impact on getting ideal body weight, having low risk of getting obesity and also helps in improving immune system. Puciato et al., (2018) agreed that physical activity are greatly contribute in improving physical fitness, reducing the risk of getting occupational disease and improving one's health-related quality of life. In addition, physical activities while being in contact with nature, such as hiking and canoeing, have been associated with greater physical and mental health benefits than traditional forms of exercise (Ekenga et al., 2019). Other than that, it is agreed that physically active can help in weight management. According to (Strasser, 2013), person that jogged less likely of 20 miles over a week can lost about 3.5kg after eight months of training compared to a person that walked 12 miles which only lost 1.1 kg.

In mental health and well-being aspect, physical activity also contributes a lot of good impact. According to Rahman et al., (2020) physical activity helps in preventing depression and improves mental health status of one's. As we all know, mental health nowadays become a new community concern. By being physically active, we can prevent mental health disease among community. Among a general adult population, regular participation in PA may prevent stress by creating a better social network, higher stress tolerance, better self-esteem, and more active coping behavior (Bogaert et al., 2014)

Besides, physical activity also helps to promote a better sleep quality. To support this statement, Tsunoda et al, (2015) stated that physical activity help in improving sleep quality by lowering the mental stress, regulating body temperature and cardiac rhythm. In other hand, physical activity (PA) is associated with reduced risk for health conditions including coronary heart disease, cancers, diabetes, and stroke (Bize et al., 2007). This is supported by other study. Regular physical activity can lower the risk of mortality, cardiopathies, strokes, hypertension, type II diabetes, osteoporosis, obesity, colon cancer and breast cancer (Franco Noce et al., 2016).

Physical activity also contributes to social aspect. Pavlova et al., (2017) explained that physical activity also helps in building a social relationship, promoting better social skills and adaptation to the rules and also learning on standards of behaviors in orders to overcome the gaps between the different social groups. Lastly, higher levels of physical activity (PA) and less sedentary behavior (SB) have multiple health benefits among older adults, such as reduced mortality risk, preventing cognitive decline and dementia, and ensuring healthier aging (Fukushima et al., 2021).

2.3 Physical activity barrier

To promote a healthy lifestyle including physical activity practice, a lot of efforts has been done. One of the effort are, physical activity programs have been suggested as a necessary course of action to promote healthy lifestyles and a better quality of life (Franco Noce et al., 2016). Even a lot of programs held to promote the benefits of being physically active, most of Malaysians are not active, and only a small percentage participates in regular and adequate physical activity, which may be due to the rapid industrialisation and urbanisation in Malaysia for the past several decades (Ibrahim et al., 2013).

For example, the Brazilian study found that lack of money and feeling too tired were the most frequently reported barriers to physical activity and meanwhile in Japan, the most significant perceived barrier was lack of time (Ibrahim et al., 2013). In other hand, Allison et al., (1999) agreed that there are four main barrier in practicing physical activity which are lack of support and services, lack of confidence and ability, lack of time, and fear of injury. In addition, Gómez-lópez et al., (2010) stated that the barrier in practicing physically activity into two category; external and internal factors. For external factor, it will include lack of time, leaving work very tired, not having facilities nearby and/or suitable for the practice of sport.

Meanwhile for internal factor, it will include factors of the fact that they do not prefer physical activity or that they don't find it useful. Other barriers are lack of social support such as the lack of parental support and lack of friends to practice sports. However,

Ziebland et al., (1998) state that those people who only select internal barriers are less prone to do more physical exercise than those who mention only external barriers or mixed (Gómez-lópez et al., 2010).

2.4 Impact of physically inactive

There are a lot of physically inactive impact. In fact, physical inactivity is estimated to contribute to at least 2 million deaths per year globally (Tessier et al., 2007). In other study, the lack of physical activity is the fourth leading cause of deaths in the world (Nowak et al., 2019). Rahman et al., (2020) stated that risk of getting chronic diseases such as hypertension, diabetes and depression may be increased by being physically inactive. This is because physical activity helps our body to regulates the blood flow in our body so that our body will have a normal body regulation and mechanism. Furthermore, there is explanation on how physical inactivity could lead to cardiovascular disease such as hypertension. Strasser (2013) in her study mentioned that physical activity on a regular basis has an antihypertensive effect and it helps to reduce heart rate and improving the sensitivity of aortic baroreceptors, which will lead to better blood pressure regulation.

Besides, being active also will reduce the risk of obesity that are very common nowadays. Obesity is defined as an abnormal and more than the normal weight that will lead to many health problems. It can be measured from body mass index. A body mass

index (BMI) which exceed value of 25 is considered overweight, and over 30 is categorized as obese. Obesity also is one of the public health concern nowadays. Mohamad Nor et al., (2018) mentioned that, the prevalence of overweight among adult in Malaysia was 29.4% in 2011 and in 2015 was 30.0%, while obesity prevalence was 15.1% and 17.7% respectively as reported by National Health and Morbidity Survey (NHMS). Obesity is recognized as a major determinant of noncommunicable diseases such as cardiovascular disease, cancers, type 2 diabetes mellitus, respiratory problems, gallbladder diseases, post-operative morbidity and musculoskeletal disorders such as osteoarthritis (Ghee, 2016).

Other impact, physical inactive also give impact to health-related quality of life. Researchers emphasize that the amount of time spent in front of computer screen or TV goes up systematically, and this has a negative impact on quality of life related to health, combined with lack of physical activity (Nowak et al., 2019). Among adolescent, there is a study by Poulsen et al., (2016) found that girls with a low level of leisure time physical activity at the age of 14-15 had a 60 % increased risk for poor mental health as a 20-21 year old, compared to girls who had a high level of leisure time physical activity.

2.5 Health-related quality of life among students.

Health-related quality of life (HRQOL) plays a vital role especially in physical and mental health of a person. This is because, when someone in a good state of quality of life, she or he can have a good physical appearance and stable mental state. Students who better perceive quality of life take advantage of all university services, are integrated better in academic backgrounds, and take part in a number of non-school related activities (Pekmezovic & Popovic, 2011). In other study, it was found that female gender, not living with family, living in a rented house, and lack of physical activity are factors known to be strongly associated with poor health-related quality of life (Lins et al., 2016).

As a student, stress and anxiety are close related as they have to maintain their academic performance. The stress and anxiety level might be different based on their courses. However, health-related quality of life is negatively associated with perceived stress among health professions students, 1-6 with student pharmacists reporting higher psychological distress than nursing and medical students (Payakachat et al., 2014). On other study done among medical students, students with positive screenings for depressive symptoms had lower scores on all domains and summary components of the SF-36 compared with those with BDI scores (Peleias et al., 2017). Sabbah et al., (2013) also agreed that academic discipline is close related with HRQoL as students studying health reported lower SF-36 scales scores than their colleagues studying business and economics. After all, as reported by Hirsch et al., (2009) , lower mental HRQOL scores were strongly associated with increased stress and use of maladaptive coping strategies

Apart of stress and anxiety, sleep deprivation also closely related to students due to assignments workloads. Insufficiency of sleep also can be one of the factors that influenced the health-related quality of life. Katz and McHorney found insomnia to be independently associated with impaired HRQOL to almost the same extent as conditions such as congestive heart failure and clinical depression. Moreover, research indicates that HRQOL worsens with more severe insomnia (Strine & Chapman, 2005). Not to quality of life only, sleep deprivation also could give impact on physical and mental health, performance of work and leisure activities. On other study done among critically ill person, it was found that sleep problem express themselves in daily living, causing difficulties in cognitive performance (learning, concentration and memory problems), mood swings and emotional distress, poor performance on the job and during leisure activities and creating a lack of general physical and mental well-being (Manocchia et al., 2001).

It is not denied that most of the students are practicing risky behaviors such as smoking and alcohol consumption. They might take it as one of the ways to release their stress about the academic performance. Furthermore, the lifestyle behavior of young is linked to their HRQoL. Results were particularly strong for smoking status where smokers were almost 9.7 and 6.97 times more likely to rate their VT and MH scales scores low compared to non-smokers (Sabbah et al., 2013). However, a study by Strine et al., (2005) found that, people with poor mental health are more likely to smoke than those without. On other similar study, it was found that students with one risky behavior or with two or

more risky behaviors reported significantly more physically unhealthy days (2.4 vs. 3.1) and mentally unhealthy days (4.3 vs. 6.7) than students with no such behaviors (1.8 physically unhealthy days and 3.1 mentally unhealthy days, respectively) (Vernon-smiley et al., 2007). As we know, mental health and health-related quality of life are close related. Somehow, these risky behaviors could affect the health-related quality of life of the students.

2.6 Socio-demographic factor on physical activity practice

2.6.1 Gender

In a study, Gómez-lópez et al., (2010) found that women showed the main reason of being physically inactive which include the lack of support, resources and, in many occasions, lack of will, tiredness and lack of time. In other study, Sabbah et al., (2013) mentioned that young women are tend to practice a sedentary lifestyle and they prefer to participate in home-based activities or unsupervised exercise such as walking. However, as far as gender differences are concerned, several studies have found that teenage boys report significantly higher levels of life satisfaction than teenage girls (Baile et al., 2020). Poulsen et al., (2016) discovered that boy are more physically active than girls whereby girls are more often reported having poor mental health. In other study, Alexandra et al., (2014) discovered that males were 53% more active than girls which only include 47%. A study done among working adult by Chau et al., (2012) discovered that men are 41.8% less sitting at work compared to women which are 46.9% while standing at work are 20.5% and 25.7% respectively .

2.6.2 Age

Gómez-lópez et al., (2010) stated that that women showed less time to the practice of moderate and vigorous physical activities as they get older. Bize et al., (2007) also reported that, the elderly are having poorer physical health than the younger population and lack physical strength and balance. Whereas, adolescents have reduced participation in active pursuits and increased their sedentary behaviors as a result of technological advances (Asare & Danquah, 2015). On other study done among teacher, Bogaert et al., (2014) found that there is a significant difference in physical health between younger teachers and middle-age teachers, with younger teachers having better physical health. However, adolescents who perceived that their parents and friends participated in physical activities more frequently had higher levels of physical activity and approximately five in ten adolescents practiced 300 minutes or more of moderate to vigorous physical activity per week (51.1%) (Alexandra et al., 2014).

2.6.3 Health Status

Having health problem could be one of the factors that associated with physically inactive. Nearly half of all adults with disabilities report being physically inactive and those that are inactive are 50% more likely to report experiencing a chronic disease than those who were active (Haegele et al., 2016). On other study on among teacher, Bogaert et al., (2014) mentioned that teachers with a BMI higher than 25 kg/m² and older than 30 years tended to have lower physical health compared to their colleagues. In similar study,

Bogaert et al., (2014) found that higher BMI and higher waist-hip ratio are related to lower levels of physical fitness and more physical problems.

Other than higher BMI, physical activity also was foundly associated to be decreased among chronic obstructive pulmonary disease (COPD) patients. This is because by doing physical activity, it will trigger to rapid respiration rate that would finally lead to exacerbation of asthma. Patients diagnosed with bronchial asthma may be susceptible to reduced levels of PA, because exercise and strenuous physical activities are renowned triggers of bronchoconstriction in these patients, resulting in exertional dyspnoea and other respiratory symptoms with exercise avoidance and deconditioning as potential consequence (Van't Hul et al., 2016).

CHAPTER 3

METHODOLOGY

3.1 Research design

This is a cross-sectional study which aimed to determine the association between physical activity and health-related quality of life among undergraduate students in public university in Malaysia. This design was used because it is very convenient and suitable to determine the relationship between physical activity and health-related quality of life at the given time. They are usually inexpensive and easy to conduct (Wang & Cheng, 2020).

3.2 Study location

This study was conducted at all 20 public universities in Malaysia which involved approximately 338,563 students. However, after the researcher did the sampling method which using coin tossing method, only 9 public universities involved which were Universiti Kebangsaan Malaysia (UKM), Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Teknologi Mara (UiTM), Universiti Sains Islam Malaysia (USIM), Universiti Sultan Zainal Abidin (UNISZA), Universiti Tun Hussein Onn (UTHM), Universiti Malaysia Terengganu (UMT) and Universiti Teknikal Malaysia (UTem). Since our country is having pandemic disease, Corona Virus 2019 (CoVid-19), most of the students are staying at their hometown instead of their hostel. Thus, this study needs to use online form survey that was described in detail in sampling method and subject recruitment section.

3.3 Study duration

The study was conducted from January 2021 until October 2021. Refer to Gantt chart.

3.4 Study population

3.4.1 Target population

The target of this cross-sectional study is an undergraduate student from 9 selected public universities in Malaysia from various programme of study which approximately 187 126 undergraduate students involved.

3.5 Subject criteria

3.5.1 Inclusion criteria

- i) Is an undergraduate students enrolled in the selected public university
- ii) The participants must be around 19 to 25 years old.
- iii) Is a Malaysian citizen.
- iv) Studying full-time

3.5.2 Exclusion criteria

- i) Currently under medical leave for serious condition.
- ii) Students on mobility programme.
- iii) International students.

3.6 Sample size estimation

The formula used to calculate the sample size for this study are derived from www.raosoft.com as below:

$$n = \frac{Nx}{[(N-1)E^2 + x]}$$

Which,

n = required sample size

N = population size of undergraduate students in selected public universities in Malaysia

x = Z value (95%) of confidence level interval, x value 1.96)

E = degree of accuracy (5%) expressed as a proportion 0.05

$$n = \frac{Nx}{[(N-1)E^2 + x]}$$

$$n = \frac{(187126)(1.96)}{[(187126-1)(0.05^2) + 1.96]}$$

n = 384 samples

3.7 Sampling method and subject recruitment

To create the sample size, researcher used a simple random sampling which is coin tossing. This method involved all 20 public universities in Malaysia and each university have 50% probability chance to be selected in this study. During this sampling, the witness was presence to avoid the bias. The university that had “head” were chosen to participate in this study, while the university that had “tails” are excluded in this study. As a result, 9 out of 20 public universities were selected to participate in this study which are Universiti Kebangsaan Malaysia (UKM), Universiti Malaya (UM), Universiti Putra Malaysia (UPM), Universiti Teknologi Mara (UiTM), Universiti Sains Islam Malaysia (USIM), Universiti Sultan Zainal Abidin (UNISZA), Universiti Tun Hussein Onn (UTHM), Universiti Malaysia Terengganu (UMT) and Universiti Teknikal Malaysia (UTem).

To make the participants in equal number of respondents, the researcher aimed to get at least 40 respondents from each university by using cluster sampling method. To reach the participants, online platforms were used to distribute the questionnaire such as WhatsApp, Telegram or Facebook via Google Form Online survey.

UNIVERSITY	COIN TOSSING	RESULT
Universiti Putra Malaysia (UPM)	Head	Accepted
Universiti Malaysia Terengganu (UMT)	Head	Accepted
Universiti Pertahanan Nasional Malaysia	Tail	Rejected
Universiti Pendidikan Sultan Idris (UPSI)	Tail	Rejected
Universiti Teknologi Mara (UiTM),	Head	Accepted
Universiti Sains Malaysia (USM)	Tail	Rejected
Universiti Kebangsaan Malaysia (UKM),	Head	Accepted
Universiti Teknologi Malaysia (UTM)	Tail	Rejected
Universiti Malaya (UM),	Head	Accepted
Universiti Islam Antarabangsa Malaysia (UIAM)	Tail	Rejected
Universiti Sultan Zainal Abidin (UNISZA),	Head	Accepted
Universiti Sarawak Malaysia (UNIMAS)	Tail	Rejected
Universiti Malaysia Perlis (UNIMAP)	Tail	Rejected
Universiti Tun Hussein Onn (UTHM)	Head	Accepted
Universiti Malaysia Sabah (UMS)	Tail	Rejected
Universiti Malaysia Pahang (UMP)	Tail	Rejected
Universiti Teknikal Malaysia (UTeM).	Head	Accepted
Universiti Kelantan Malaysia (UMK)	Tail	Rejected
Universiti Utara Malaysia (UUM)	Tail	Rejected
Universiti Sains Islam Malaysia (USIM)	Head	Accepted

Table 3.7.1 List of public universities in Malaysia

3.8 Research tools/instruments

A questionnaire administered through electronic media were used in this study. Socio-demographic data on age, gender, Cumulative Grade Point Average (CGPA) ethnicity and type of residential were collected. Two standardised instruments were included as part of the questionnaire which are short version of International Physical Activity Questionnaire (IPAQ-S) and The 36-Item Short Form Health Survey questionnaire (SF-36).

3.8.1 International Physical Activity Questionnaire (IPAQ)

The International Physical Activity Questionnaires (IPAQ) comprises a set of 4 questionnaires. Long (5 activity domains asked independently) and short (4 generic items) versions. IPAQ is suitable for adults between 15 and 69 years of age and is primarily used for population surveillance of physical activity levels. This questionnaire involved few aspects including job related physical activity, transportation physical activity, housework, house maintenance and caring for family, recreation, sports and leisure time physical activity and time spent sitting. This questionnaire has been validated in 12 countries and has acceptable measurement properties for monitoring population levels of PA among 18 to 65 years old adults. The reliability correlations ranged from 0.34 to 0.89, with a median of about 0.80 and criterion validity correlations ranged from 0.14 to 0.53.

Results can be reported in categories (low activity levels, moderate activity levels or high activity levels) or as a continuous variable (MET minutes a week). MET minutes

represent the amount of energy expended carrying out physical activity. To calculate MET minutes a week multiply the MET value given (remember walking = 3.3, moderate activity = 4, vigorous activity = 8) by the minutes the activity was carried out and again by the number of days that that activity was undertaken. For example, if someone reports walking for 30 minutes 5 days a week then the total MET minutes for that activity are $3.3 \times 30 \times 5 = 495$ Met minutes a week. The scoring method for this questionnaire will be shown as below:

Table 3.8.1 Physical Activity category

Category 1: Low	<ul style="list-style-type: none"> • Individuals who are not meet criteria for categories 2 or 3.
Category 2: Moderate	<ul style="list-style-type: none"> • 3 or more days of vigorous activity of at least 20 minutes per day OR • 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR • 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week.
Category 3: Vigorous	<ul style="list-style-type: none"> • Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/ week OR • 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week

3.8.2 The 36-Item Short Form Health Survey Questionnaire (SF-36)

The SF-36 consists of eight scaled scores, which are the weighted sums of the questions in their section. It consists of physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to emotional problems, emotional well-being, social functioning, energy/fatigue, and general health perceptions. All eight scales found to have good to excellent internal consistency (Cronbach's α ranging from 0.74/GH to 0.92/PF). Each scale is directly transformed into a 0-100 scale on the assumption that each question carries equal weight. The lower the score the more disability. Scoring the RAND 36-Item Health Survey is a two-step process. First, pre-coded numeric values are recoded per the scoring key given in Table 3.8.2.1. Note that all items are scored so that a high score defines a more favourable health state. In addition, each item is scored on a 0 to 100 range so that the lowest and highest possible scores are 0 and 100, respectively. Scores represent the percentage of total possible score achieved. Step 1 are shown as below:

Step 1: Recoding Items

Item numbers	Change original response category *	To recoded value of:
1, 2, 20, 22, 34, 36	1 →	100
	2 →	75
	3 →	50
	4 →	25
	5 →	0
3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1 →	0
	2 →	50
	3 →	100
13, 14, 15, 16, 17, 18, 19	1 →	0
	2 →	100
21, 23, 26, 27, 30	1 →	100
	2 →	80
	3 →	60
	4 →	40
	5 →	20
	6 →	0
24, 25, 28, 29, 31	1 →	0
	2 →	20
	3 →	40
	4 →	60
	5 →	80
	6 →	100
32, 33, 35	1 →	0
	2 →	25
	3 →	50
	4 →	75
	5 →	100

Table 3.8.2.1 Recoding item into scoring

In step 2, items in the same scale are averaged together to create the 8 scale scores. Table 3.8.2.2 lists the items averaged together to create each scale. Items that are left blank (missing data) are not taken into account when calculating the scale scores. Hence, scale scores represent the average for all items in the scale that the respondent answered. Step 2 are shown as below.

Step 2: Averaging Items to Form Scales

Scale	Number of items	After recoding per Table 1, average the following items
Physical functioning	10	3 4 5 6 7 8 9 10 11 12
Role limitations due to physical health	4	13 14 15 16
Role limitations due to emotional problems	3	17 18 19
Energy/fatigue	4	23 27 29 31
Emotional well-being	5	24 25 26 28 30
Social functioning	2	20 32
Pain	2	21 22
General health	5	1 33 34 35 36

Table 3.8.2.2 Number of questions based on domains in health-related quality of life

3.9 Data collection

The questionnaires via Google forms online surveys were distributed to the selected participants and must be completed through electronic media such as WhatsApp, Telegram and Facebook. The informed consent had been provided at the second section in the online Google Form survey and followed by the participant characteristics data at the next section. Informed consent is very important as the proof that all the data taken are remain confidential and not being exposed to the other party.

3.10 Data analysis

Data were collected and analyzed by using IBM Statistical Package for the Social Sciences (SPSS) version 20.0 for Windows. All the data will be recorded in SPSS for descriptive and inferential analysis.

Table 3.10 Statistical Measurement used for descriptive and inferential based on objectives

DESCRIPTIVE ANALYSIS			
Objectives	Variables	Type of variables	Statistical Measurement
To determine the demographic data of the undergraduate students.	Gender, ethnicity, BMI, CGPA, type of residential, smoking, alcohol intake, risky health problem	Categorical	Frequency and percentage
	Age	Continuous	Mean and standard deviation
To determine the time spent doing physical activity among undergraduate students in public universities.	Level of physical activity (PA)	Categorical	Frequency and percentage
To assess the health-related quality of life among undergraduate students in public universities in Malaysia.	Health-related quality of life (HRQOL)	Continuous	Standard deviation (SD) and mean

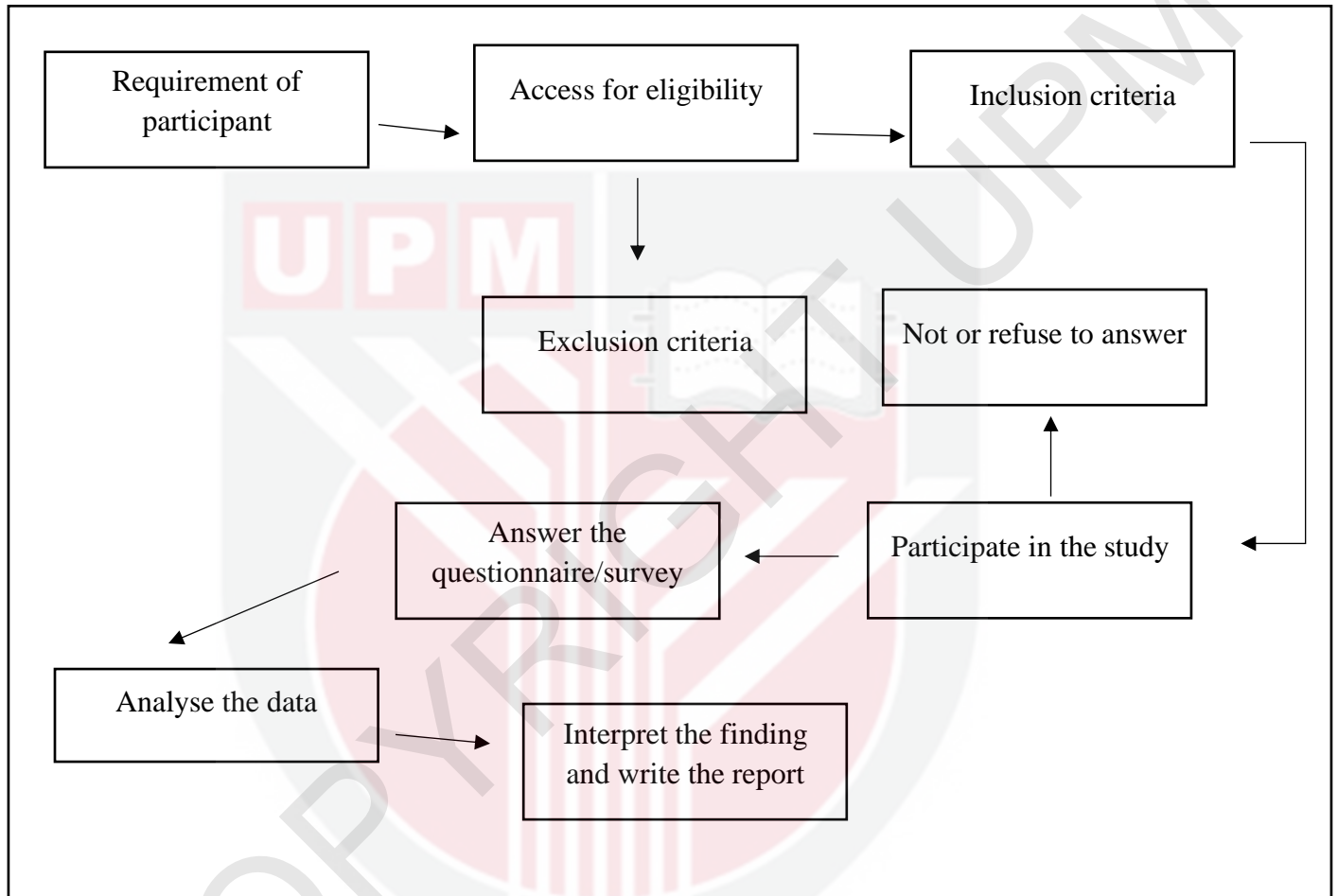
INFERENCEAL DATA				
Objectives	Dependent Variables	Independent Variables	Variables type	Statistical Measurement
To determine the relationship between demographic data and physical activity among undergraduate students in public universities in Malaysia	Physical activity	Age	Continuous	Point Biserial Correlation
	(categorical)	Gender, ethnicity, BMI, CGPA, type of residential, smoking, alcohol intake, risky health problem	Categorical	Pearson Chi-Square
To determine the relationship between demographic data and health-related quality of life among undergraduate students in public universities in Malaysia	Health-related quality of life	Age	Continuous	Pearson Correlation
		Gender, Smoking, Alcohol intake, Risky health problem	Categorical	Independent T-Test
		Ethnicity, Body Mass Index, Cumulative Grade Point Average (CGPA), Type of residential	Categorical	One Way Independent ANOVA
To examine the relationship between the time spent doing physical activity and health-related quality of life among undergraduate students in public universities in Malaysia.	Health-related quality of life (continuous)	Physical activity (categorical)	-	One Way Independent ANOVA

3.11 Ethical considerations

A written approval and permission were obtained from the Jawatankuasa Etika Universiti Penyelidikan Melibatkan Manusia (JKEUPM). To conduct the study, participants were provided with adequate informations and they have the rights to voluntarily participate in this study. The participants also have the right to withdraw themselves from this study at any time without any consequences. Therefore, the participant will sign the participant information sheet provided to show the willingness to participate in this study. Since this study in using online Google form, there is a section that will provide the consent form for the participants and the participants have to tick on the box provided if they agreed to join the study.

3.12 Study flowchart

Figure 3.12.1: Study flowchart



CHAPTER 4

RESULT

4.1 Introduction

A total of 244 participants has responded to the online survey. Sample size needed for study was 384 participants with 95% confidence level and 5% margin error but the researcher got lesser participants from the actual sample size which were 244 responses. To analyse the result, parametric measurements were used since the data were normally distributed where kurtosis and skewness are 0.156 and 0.310 respectively.

4.2 Sociodemographic among respondents

Table 4.2.1 shows that mean and standard deviation for age was 22.62 ± 1.110 . Out of 244, 184 (75.4%) respondents represented female respondents and 228 (93.4%) were Malay respondents. The result shows that most of the respondents are staying at their parent's house which consists of 113 (46.3%) respondents, 85 (34.8%) respondents are staying at the hostel, 24 (9.8%) respondents are staying at their rental house or rental room, and 22 (9%) respondents stayed at their hometown. For Cumulative Grade Point Average (CGPA), most of the respondents are having 3.50 to 4.00 of CGPA which are 106 (43.4%) respondents, 105 (43%) respondents states that they are having CGPA of 3.00 to 3.49, 23 (9.4%) respondents stated that they are having CGPA of 2.50 to 2.99, meanwhile 8 (3.3%) choose passed and lastly out of 244 respondents, 2 (0.8%) respondents are having CGPA

of 2.00 to 2.49. In this study, only 9 (3.7%) were smoker and 3 (1.2%) respondents were taking alcohol. Based on the findings on the history of having any risky health problem, only 6 (2.5%) respondents were having health problems such as asthma and allergic reaction. For body mass index (BMI), half of the respondent, 131 respondents (53.7%) were in normal BMI, followed by 55 (22.5%) respondents and 40 (16.4%) were categorized as underweight person and overweight respectively. Only 18 (7.4%) respondents were categorized as obese person.

Table 4.2.1: Sociodemographic data of the respondents

Characteristics		n	%	Mean	SD
Age		244	100	22.62	1.110
Gender	Male	60	24.6		
	Female	184	75.4		
Ethnicity	Malay	228	93.4		
	Chinese	9	3.7		
	Indian	2	0.8		
	Others	5	2		
Cumulative Grade Average Point (CGPA)	3.50 – 4.00	106	43.4		
	3.00 – 3.49	105	43		
	2.50 – 2.99	23	9.4		
	2.00 – 2.49	2	0.8		
	Passed	8	3.3		
Type of residential	Hometown	22	9		
	Parent's Home	113	46.3		
	Collage/Hostel	85	34.8		
	Rental House/Room	24	9.8		
Body Mass Index (BMI)	Underweight	55	22.5		
	Normal	131	53.7		
	Overweight	40	16.4		
	Obese	18	7.4		
Smoking	Yes	9	3.7		
	No	235	96.3		
Alcohol Intake	Yes	3	1.2		
	No	241	98.8		
	Yes	6	2.5		
Risky Health Problem	No	238	97.5		

4.3 Time spent doing physical activity

Table 4.3.1 shows the level of physical activity that had been done by the respondents in the past 7 days. The total Metabolic Equivalents (MET) value were calculated and categorized based on the criteria mentioned in Chapter 3. The data shows that 56.6% of the respondents were having a moderate level of physical activity (n=138), while 25.8% (n=63) of them were having a low level of physical activity and only 17.6% (n=43) of them were having a high level of physical activity in the past 7 days. The mean \pm standard deviation for the total MET score was 1769.50 ± 1977.80 .

Table 4.3.1: Time spent doing physical activity

Variable	Mean \pm standard deviation	Frequency (n)	Percentage (%)
Level of physical activity	1769.50 ± 1977.80	244	100
Low		63	25.8
Moderate		138	56.6
High		43	17.6

4.4 Health-related quality of life among respondents

For first aspect in health-related quality of life which are physical functioning (PF), it consists of 10 items starting from item number 3 until item number 12. Based on the table, 46.3% (n=113) of the respondents reported that they have a little bit limitation in doing vigorous activities and, 75.85 (n=185) of the respondents agreed that they were not having any limitation in performing moderate activities such as moving tables.

Most of the respondents (n=208, 85.2%) reported that no limitation in lifting or carrying groceries, 67.2 % (n=164) of the respondents have no limitation to climb several flights of stairs while 79.9% (n=195) of the respondents choose not limited at all in climbing one flight of stairs. In bending, kneeling or stooping, most of the respondent choose not limited at all (n=175, 71.7%) followed by limited a little (n=64, 26.2%) and limited a lot (n=5, 2.0%). For item number 9,10 and 11, majority of the respondent reported that they are not having limitation in walking more than a mile (n=164, 67.2%), walking several blocks (n=175, 71.7%) and walking one block (n=195, 79.9%) respectively. Lastly, most of the respondents reported that they are having no limitation (n=210, 86.1%) in bathing or dressing themselves.

Table 4.4.1: Physical functioning aspect in health-related quality of life.

Variable	Mean \pm standard deviation	Frequency	Percentage %
Physical Functioning (PF)	84.61 \pm 18.94	244	100
The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?			
3 Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.			
Yes, Limited a lot		25	10.2%
Yes, Limited a Little		113	46.3%
No, Not Limited at all		106	43.4%
4 Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf			
Yes, Limited a lot		6	2.5%
Yes, Limited a Little		53	21.7%
No, Not Limited at all		185	75.8%
5 Lifting or carrying groceries			
Yes, Limited a lot		6	2.5%
Yes, Limited a Little		30	12.3%
No, Not Limited at all		208	85.2%
6 Climbing several flights of stairs			
Yes, Limited a lot		12	4.9%
Yes, Limited a Little		68	27.9%
No, Not Limited at all		164	67.2%
7 Climbing one flight of stairs			
Yes, Limited a lot		6	2.5%
Yes, Limited a Little		43	17.6%
No, Not Limited at all		195	79.9%
8 Bending, kneeling, or stooping			

	Yes, Limited a lot	5	2.0%
	Yes, Limited a Little	64	26.2%
	No, Not Limited at all	175	71.7%
9	Walking more than a mile		
	Yes, Limited a lot	9	3.7%
	Yes, Limited a Little	71	29.1%
	No, Not Limited at all	164	67.2%
10	Walking several blocks		
	Yes, Limited a lot	10	4.1%
	Yes, Limited a Little	59	24.2%
	No, Not Limited at all	175	71.7%
11	Walking one block		
	Yes, Limited a lot	7	2.9%
	Yes, Limited a Little	42	17.2%
	No, Not Limited at all	195	79.9%
12	Bathing or dressing yourself		
	Yes, Limited a lot	10	4.1%
	Yes, Limited a Little	24	9.8%
	No, Not Limited at all	210	86.1%

For role limitation due to physical health (RP) aspect, it consists of four questions which are item number 13,14,15 and 16. These questions ask about the problems that appears due to limitation of physical health. For item number 13, 177 (72.5%) of the respondents reported that they are not cutting down the amount of time that they spent on their activities, while the rest 67 (26.5%) of the respondents are cutting the amount of time on doing activities. For item number 14, 162(66.4%) of the respondents admitted that they did not accomplish less than what they would like due to limitation in physical health and 82 (33.6%) of the respondents admitted that they accomplished less yet having limitation in physical health. For item number 15, 171 (70.1%) of the respondents reported that they are not having any limitation in doing work or activities while having physical problem and 73(29.9%) of the respondents were having limitation in doing works and activities. Lastly for item number 16, 168(68.9%) of the respondents reported that they did not having difficulty in performing their work.

Table 4.4.2: Role limitations due to physical health aspect.

Variable	Mean \pm standard deviation	Frequency	Percentage %
Role Limitations Due to Physical Health (RP)	69.26 \pm 36.75	244	100
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?			
13	Cut down the amount of time you spent on work or other activities		
	Yes	67	27.5%
	No	177	72.5%
14	Accomplished less than you would like		
	Yes	82	33.6%
	No	162	66.4%
15	Were limited in the kind of work or other activities		
	Yes	73	29.9%
	No	171	70.1%
16	Had difficulty performing the work or other activities (for example, it took extra effort)		
	Yes	76	31.1%
	No	168	68.9%

For next domain which is role limitation due to emotional problem (RE) aspects, it consists of three questions which are item number 17, 18 and 19. The results are shown in table 4.4.3 below. For item number 17, 152 (62.3%) of the respondents reported that they are not cutting down the amount of time that they spent on their activities, while the rest 92 (37.7%) of the respondents are cutting the amount of time on doing activities due to having emotional problems. For item number 18, 135 (55.3%) of the respondents admitted that they did not accomplish less than what they would like due to emotional problems and 109 (44.7%) of the respondents admitted that they accomplished less yet having limitation in emotional. For item number 19, 157 (64.3%) of the respondents reported that they still can do the other activities as usual while 87(35.7%) of the respondents reported that they did not do their work or activities as careful as usual.

Table 4.4.3: Role limitations due to emotional problems aspect

Variable	Mean \pm standard deviation	Frequency	Percentage %
Role Limitations Due to Emotional Problems (RE)	60.92 \pm 41.38	244	100
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?			
17	Cut down the amount of time you spent on work or other activities		
	Yes	92	37.7%
	No	152	62.3%
18	Accomplished less than you would like		
	Yes	109	44.7%
	No	135	55.3%
19	Didn't do work or other activities as carefully as usual		
	Yes	87	35.7%
	No	157	64.3%

For next domain which are energy and fatigue (VT) aspects consists of four items which are item number 23,27,29 and 31. This aspect asked how the respondents feel and how things have been with them for past four weeks. For item number 23, most of the respondents agreed that their feel full of pep in some of the time (n=84, 32.4%). For item number 27, it asked about the energy that respondents have. Most of the respondents 89 (36.5%) reported that, most of the time, they have a lot of energy. Then followed by “a good bit of the time” (n=65, 26.5%), “some of the time” (n=47, 19.3%), “a little bit of the time” (n=24, 9.8%), “all of the time” (n=16, 6.6%) and “none of the time” (n=3, 1.2%). For item number 29, it asked about the feeling of worn out. 25.8% of the respondents reported that, some of the time (n=63) they have feel worn out followed by 24.2% choose “a good bit of the time” (n=59), 19.7% choose “most of the time” (n=48), 14.3% choose “a little bit of the time” (n=35), 9.4% choose “none of the time” (n=23), and 6.6% choose “all of the time” (n=16). For item number 31, is asked about the feeling of tired. 66(27.0% of the respondents reported that, most of the time they feel tired.

Table 4.4.4: Energy/fatigue aspect in health-related quality of life.

Variable	Mean \pm standard deviation	Frequency	Percentage %
Energy/fatigue (VT)	48.68 \pm 17.26	244	100
<p>These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.</p>			
23 Did you feel full of pep?			
All of the time		5	2%
Most of the time		24	9.8%
A good Bit of the Time		69	28.3%
Some of the time		84	34.4%
A little bit of the time		36	14.8%
None of the Time		26	10.7%
27 Did you have a lot of energy?			
All of the time		16	6.6%
Most of the time		89	36.5%
A good Bit of the Time		65	26.5%
Some of the time		47	19.3%
A little bit of the time		24	9.8%
None of the Time		3	1.2%
29 Did you feel worn out?			
All of the time		16	6.6%
Most of the time		48	19.7%
A good Bit of the Time		59	24.2%
Some of the time		63	25.8%
A little bit of the time		35	14.3%
None of the Time		23	9.4%
31 Did you feel tired?			

All of the time	44	18%
Most of the time	66	27%
A good Bit of the Time	57	23.4%
Some of the time	44	18%
A little bit of the time	22	9%
None of the Time	11	4.5%

Next domains were emotional well-being (MH) aspect consists of five items. This aspect asked how the respondents feel and how things have been with them for past four weeks in emotional aspect. The mean and standard deviation are 57.55 ± 15.80 . In item number 24, most of the respondents give similar options which are “a good bit of the time” (n=58, 23.8%), “some of the time” (n=58, 23.8%), “most of the time” (n=53, 21.7%) and “a little bit of the time (n=53, 21.7%). For “none of the time” and “all the time”, the results show a result of 5.3% (n=13) and 3.7% (n=9) respectively. For item number 25, 24.6% (n=60) of the respondents agreed that they felt so dumps, 23.8% (n=58) choose “some of the time”, 22.5% (n=55) choose “a little bit of the time”, 13.9% (n=34) choose “most of the time”, 10.2% (n=25) choose none of the time and lastly only 4.9% (n=12) of the respondent felt so dumps all the time. For item number 26, 91 (37.3%) respondents felt calm and peaceful most of the time, 80 (32.8%) respondents felt it in a good bit of the time and 40 (16.4%) respondents felt it some of the time. Meanwhile, 14 (5.7%) respondents felt calm and peaceful in all of the time and a little bit of the time respectively. Only 5 (2.0%) respondents haven’t felt calm and peaceful. For item number 28, it asked about the feeling of downhearted and blue. 69 (28.3%) of respondents feel it in a good bit of the time, 63 (25.8%) respondents felt it in some of the time, 48 (19.7%) respondents felt it in most

of the time, 33 (13.5%) respondents felt it in a little bit of time, 24 (9,8%) respondents never felt downhearted and blue and only 7 (2.9%) respondent felt it most of the time.

For last item in this domain, it asked either respondent have been a happy person previously. 95 (38.9%) respondents choose “most of the time”, 70 (28.7%) respondents chose “a good bit of the time”, 33 (13.5%) choose “all of the time”, 31 (12.7%) choose “some of the time”, 11 (4.5%) choose “a little bit of the time” and only 4 (1.6%) respondents reported that they never been a happy person previously.

Table 4.4.5: Emotional well-being aspect in health-related quality of life.

Variable	Mean ± standard deviation	Frequency	Percentage %
Emotional Well-Being (MH)	57.55 ± 15.80	244	100%
These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling			
24 Have you been a very nervous person?			
All of the time		9	3.7%
Most of the time		53	21.7%
A good Bit of the Time		58	23.8%
Some of the time		58	23.8%
A little bit of the time		53	21.7%
None of the Time		13	5.3%
25 Have you felt so down in the dumps that nothing could cheer you up?			

	All of the time	12	4.9%
	Most of the time	34	13.9%
	A good Bit of the Time	60	24.6%
	Some of the time	58	23.8%
	A little bit of the time	55	22.5%
	None of the Time	25	10.2%
26	Have you felt calm and peaceful?		
	All of the time	14	5.7%
	Most of the time	91	37.3%
	A good Bit of the Time	80	32.8%
	Some of the time	40	16.4%
	A little bit of the time	14	5.7%
	None of the Time	5	2.0%
28	Have you felt downhearted and blue?		
	All of the time	7	2.9%
	Most of the time	48	19.7%
	A good Bit of the Time	69	28.3%
	Some of the time	63	25.8%
	A little bit of the time	33	13.5%
	None of the Time	24	9.8%
30	Have you been a happy person?		
	All of the time	33	13.5%
	Most of the time	95	38.9%
	A good Bit of the Time	70	28.7%
	Some of the time	31	12.7%
	A little bit of the time	11	4.5%
	None of the Time	4	1.6%

For social functioning (SF) aspects, it consists of 2 questions which is item number 20 and 32. Based on the table 4.4.6, in item number 20, 89 (36.5%) of the respondents reported that emotional problem had slightly interfered in their normal social activities. Then it followed by moderately interfered (n=71, 29.1%), not interfered at all (n=59, 24.2%), severely interfered (n=23, 9.4%) and lastly very severely interfered their normal social activities (n=2, 0.8%). For item number 32, 80 (32.8%) of the respondents choose “some of the time”, followed by “a little bit of the time” (n=77, 31.6%), “none of the time” (n=40, 16.4%), “most of the time” (n=37, 15.2%) and “all of the time” (n=10, 4.1%).

Table 4.4.6: Social functioning aspect in health-related quality of life.

Variable	Mean \pm standard deviation	Frequency	Percentage %
Social Functioning (SF)	64.21 \pm 21.29	244	100%
20 Emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?			
Not at all		59	24.2%
Slightly		89	36.5%
Moderately		71	29.1%
Severe		23	9.4%
Very Severe		2	0.8%
32 During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?			
All of the time		10	4.1%
Most of the time		37	15.2%
Some of the time		80	32.8%
A little bit of the time		77	31.6%
None of the Time		40	16.4%

For pain (BP) domain's questions, it consists of item number 21 and 2. From the table, item number 21 shows that, the respondent reported that they are having very mild bodily pain (n=75, 30.7%), followed by, mild bodily pain (n=71, 29.1%), having moderate bodily pain (n=52, 21.3%), admitted no bodily pain (n=38, 15.6%), having severe bodily pain (n=6, 2.5%) and lastly having very severe bodily pain (n=2, 0.8%). For item number 22, 105 (43.0%) of the respondents admit that the pain had a little bit interfere with their normal work, followed by not interfere at all (n=65, 26.6%), moderately interfere (n=58, 23.8%), quite a bit interfered (n=13, 5.3%) and extremely interfere (n=3, 1.2%).

Table 4.4.7: Pain aspect in health-related quality of life.

Variable		Mean \pm standard deviation	Frequency (n)	Percentage %
Pain		69.68 \pm 19.72	244	100%
21	How much bodily pain have you had during the past 4 weeks?			
	None		38	15.6%
	Very Mild		75	30.7%
	Mild		71	29.1%
	Moderate		52	21.3%
	Severe		6	2.5%
	Very Severe		2	0.8%
22	During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?			
	Not at all		65	26.6%
	A little bit		105	43.0%
	Moderately		58	23.8%
	Quite a bit		13	5.3%
	Extremely		3	1.2%

For the eighth domain which is general health (GH) in health-related quality of life, it consists of five items. For item number 1, nearly half of the respondents admit that their health are good (n=121, 49.6%). For item number 33, most of the respondents choose “mostly false” (n=86, 35.2%) shows that they are not really agree that they are prone to sick easier than other people. For item number 34, half of the respondents (n=125, 51.2%) choose “mostly true”, followed by “don’t know” (n=58, 23.8%), “definitely true” (n=38, 15.6%), “mostly false” (n=13, 5.3%) and lastly “definitely false” (n=10, 4.1%). For item number 35, most of the respondent (n=82, 33.6%) choose “definitely false” and don’t expect that their health is getting worse. For the last items, mostly half of the respondents (n=121, 49.6%) choose “mostly true” and agree that their health are excellent.

Table 4.4.8: General health aspect in health-related quality of life.

Variable	Mean ± standard deviation	Frequency (n)	Percentage %
General Health (GH)	66.35 ± 17.214	244	100%
1 In general, would you say your health is:			
Excellent		20	8.2%
Very good		75	30.7%
Good		121	49.6%
Fair		25	10.2%
Poor		3	1.2%
33 I seem to get sick a little easier than other people			
Definitely true		5	2.0%
Mostly true		34	13.9%

	Don't know	47	19.3%
	Mostly false	86	35.2%
	Definitely false	72	29.5%
34	I am as healthy as anybody I know		
	Definitely true	38	15.6%
	Mostly true	125	51.2%
	Don't know	58	23.8%
	Mostly false	13	5.3%
	Definitely false	10	4.1%
35	I expect my health to get worse		
	Definitely true	5	2.0%
	Mostly true	26	10.7%
	Don't know	70	28.7%
	Mostly false	61	25.0%
	Definitely false	82	33.6%
36	My health is excellent		
	Definitely true	42	17.2%
	Mostly true	121	49.6%
	Don't know	58	23.8%
	Mostly false	12	4.9%
	Definitely false	11	4.5%

4.5 The relationship between demographic data and level of physical activity

A Point-Biserial correlation was used to determine the relationship between age with level of physical activity. Based on table 4.5.1, it is shown that the age has a strong significant relationship with level of physical activity at p -value 0.008 (rpb: 0.169). The positive correlation shows that the increase the age, the increase the level of physical activity among undergraduate students as shown in figure 4.5.1 below.

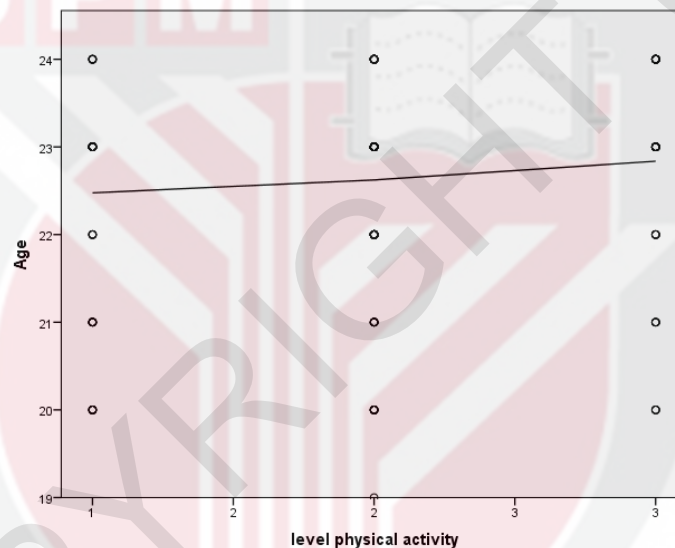


Figure 4.5.1 The scatterplot shows that higher age was associated with higher level of physical activity.

A Pearson Chi-Square test was used to identify the relationship between gender, ethnicity, CGPA, type of residential, alcohol intake, smoking, risky health problem and BMI with level of physical activity. There was a strong significant relationship between gender and level of physical activity at p -value 0.000. Besides, there was a strong significant relationship between body mass index (BMI) with level of physical activity at p -value 0.040.

Table 4.5.1: Demographic characteristics of undergraduate students with level of physical activity.

Demographic characteristic	Level of physical activity (PA)			X ²	rpb	p-value
	Frequency (Percentage within group)					
	Low	Moderate	High			
Age					0.169	0.008 ^{*a}
Gender	Male	14 (24%)	24 (40%)	22 (36%)	20.421	0.000 ^{*b}
	Female	49 (27%)	114 (61%)	21 (12%)		
Ethnicity	Malay	59 (26%)	129 (56.5%)	40 (17.5%)	7.695	0.261 ^b
	Chinese	2 (22.2%)	5 (55.6%)	2 (22.2%)		
	Indian	2 (100%)	0	0		
	Other	0	4 (80%)	1 (20%)		
	Passed	3 (37.5%)	3 (37.5%)	2 (25%)		
Cumulative Grade Average Point	3.50 – 4.00	28 (26.4%)	60 (56.6%)	18 (17%)	3.029	0.933 ^b
	3.00 – 3.49	24 (22.9%)	61 (58.1%)	20 (19%)		
	2.50 – 2.99	7 (30.4%)	13 (56.5%)	3 (13.0%)		
	2.00 – 2.49	1 (50%)	1 (50%)	0		
	Passed	3 (37.5%)	3 (37.5%)	2 (25%)		
Type of residential	Hometown	3 (13.6%)	14 (63.6%)	5 (22.8%)	5.646	0.464 ^b
	Parent's Home	30 (26.5%)	64 (56.7%)	19 (16.8%)		
	Collage/ Hostel	27 (31.8%)	44 (51.8%)	14 (16.4%)		
	Rental house/room	3 (12.5%)	16 (66.7%)	5 (20.8%)		
Alcohol Intake	Yes	0	2 (66.7%)	1 (33.3%)	1.265	0.531 ^b
	No	63 (26.6%)	132 (55.7%)	42 (17.7%)		
Smoking	Yes	3 (33.3%)	4 (44.4%)	2 (22.3%)	0.559	0.756 ^b
	No	60 (25.5%)	134 (57.0%)	41 (17.5%)		
Risky Health Problem	Yes	0	5 (83.3%)	1 (16.7%)	2.371	0.306 ^b
	No	63 (26.5%)	133 (55.9%)	42 (17.6%)		

Body mass index (BMI)	Underweight	16 (29%)	36 (65.5%)	3 (5.5%)	13.214	0.040^{* b}
	Normal	30 (23%)	76 (58%)	25 (19%)		
	Overweight	14 (35%)	11 (27.5%)	15 (37.5%)		
	Obese	3 (16.7%)	11 (61.1%)	4 (22.2%)		

a. Point-Biserial Correlation

b. Pearson Chi-Square

* Significant at p -value<0.05

4.6 The relationship between demographic data and health-related quality of life.

A Pearson correlation test was used to analyse the relationship between continuous-typed socio-demographics factors such as age with health-related quality of life aspects. Based on the table 4.6.1, the result show that, there is significant association between age and social functioning (SF), role limitation due to emotional problem (RE) and emotional well-being (MH) and general health (GH) aspect, where p value 0.017, 0.006, 0.002 and 0.007.

Independent T-Test were used to identify the relationship between categorical-typed socio-demographics factors such as gender, smoking, alcohol intake and risky health problem with health-related quality of life. For gender and alcohol consumption, there was no association found with any domain in health-related quality of life. For smoking, there was a significant relationship between smoking and energy and fatigue (VT), role limitation due to physical health (RP) and general health (GH) at p -value 0.033, 0.036 and

0.007 respectively. For risky health problem, it shows a strong correlation with energy and fatigue (VT) at *p-value* 0.000.

One-Way Independent ANOVA were used to analyse the relationship between categorical-typed socio-demographic factors such as ethnicity, cumulative grade point average (CGPA), type of residential and BMI with HRQOL aspects. For ethnicity, there was a significant relationship between ethnicity and role limitation due to emotional problem (RE) at *p-value* 0.025. For cumulative grade point average (CGPA), there was a significant relationship between CGPA and role limitation due to emotional problem (RE) and physical functioning (PF) at *p-value* 0.043 and 0.038 respectively. For type of residential, there was a significant relationship between type of residential and physical functioning (PF) and general health (GH) at *p-value* 0.025 and 0.017 respectively. For BMI, there was a significant relationship between BMI and social functioning (SF) and general health (GH) at *p-value* 0.016 and 0.007 respectively.

Table 4.6.1: Relationship between demographic characteristic and health-related quality of life based on its aspect among undergraduate students

VARIABLE	VT			SF			RE			MH		
	F/t	r	P value	F/t	r	P value	F/t	r	P value	F/t	r	P value
Age		0.063	0.33 ^a		0.153	0.017 ^{*a}		0.175	0.006 ^{*a}		0.194	0.002 ^{*a}
Gender	0.507		0.613 ^b	- 0.184		0.854 ^b	0.376		0.745 ^b	0.894		0.372 ^b
Ethnicity	0.614		0.606 ^c	0.744		0.527 ^c	3.183		0.025 ^{*c}	0.643		0.588 ^c
CGPA	0.269		0.897 ^c	1.374		0.243 ^c	2.497		0.043 ^{*c}	1.109		0.943 ^c
Type of residential	1.471		0.223 ^c	0.857		0.464 ^c	1.190		0.314 ^c	1.888		0.346 ^c
Alcohol Intake	0.469		0.640 ^b	0.556		0.579 ^b	-1.17		0.241 ^b	1.75		0.082 ^b
Smoking	-2.144		0.033 ^{*b}	1.782		0.076 ^b	-0.954		0.341 ^b	- 1.161		0.247 ^b
Risky Health Problem	3.603		0.000 ^{*b}	1.515		0.131 ^b	0.324		0.746 ^b	-0.034		0.973 ^b
BMI	1.342		0.261 ^c	3.530		0.016 ^{*c}	2.235		0.085 ^c	0.484		0.694 ^c

a. Pearson correlation

b. Independent T-test

c. One-way ANOVA

* Significant at p -value<0.05

HEALTH RELATED QUALITY OF LIFE (HRQOL)

VARIABLE	PF			RP			BP			GH		
	F/t	r	P value	F/t	r	P value	F/t	r	P value	F/t	r	P value
Age		0.22	0.738 ^a		0.098	0.127 ^a		0.102	0.113 ^a		0.171	0.007 ^{*a}
Gender	-1.192		0.235 ^b	- 0.326		0.745 ^b	1.256		0.210 ^b	- 0.268		0.789 ^b
Ethnicity	1.496		0.216 ^c	0.647		0.585 ^c	0.805		0.492 ^c	0.790		0.500 ^c
CGPA	2.582		0.038 ^{*c}	1.556		0.187 ^c	1.496		0.204 ^c	0.619		0.649 ^c
Type of residential	3.176		0.025 ^{*c}	2.395		0.069 ^c	1.026		0.382 ^c	3.474		0.017 ^{*c}
Alcohol Intake	1.110		0.268 ^b	0.66		0.506 ^b	1.446		0.149 ^b	1.21		0.226 ^b
Smoking	1.957		0.500 ^b	2.109		0.036 ^{*b}	- 0.724		0.470 ^b	- 2.743		0.007 ^{*b}
Risky Health Problem	-0.276		0.783 ^b	-0.737		0.462 ^b	0.396		0.692 ^b	0.165		0.869 ^b
BMI	1.936		0.124 ^c	1.180		0.318 ^c	2.106		0.100 ^c	4.171		0.007 ^{*c}

a. Pearson correlation

b. Independent T-test

c. One-way ANOVA

* Significant at p -value<0.05

4.7 Relationship between level of physical activity and health-related quality of life.

One way ANOVA test was used to analyse the relationship between level of physical activity and health-related quality of life among undergraduate students and it shows that there was a significant relationship between level of physical activity and mental health (MH) and vitality (VT) score where p -value is 0.04 for both domains respectively.

Table 4.7.1: One Way ANOVA test between level of physical activity and health-related quality of life based on its domain.

Health-related quality of life (HRQOL)	Level of physical activity (PA)			
	df	Mean square	F	<i>P-value</i>
Social Functioning (SF)	2	510.969	1.130	0.325
Physical Functioning (PF)	2	401.637	1.121	0.328
Role Limitations Due to Physical Health (RP)	2	947.798	0.7	0.498
Role Limitations Due to Emotional Problems (RE)	2	2912.193	1.70	0.183
Energy/Fatigue (VT)	2	1605.839	5.652	0.004*
Emotional Well-Being (MH)	2	1358.818	5.653	0.004*
Bodily Pain (BP)	2	211.963	0.543	0.582
General Health (GH)	2	857.768	1.130	0.325

* Significant at p -value<0.0

CHAPTER 5

DISCUSSION

5.1 Time spent doing physical activity among respondents

Based on the finding on chapter 4, 56.6% of the undergraduate students were having moderate physical activity practice (n=138), 63 (25.5%) of them were practicing low physical activity and only 43 (17.6%) students were having high physical activity practice in their daily life. This finding in this study were in good agreement with the data reported in WHO which stated that one in four (23%) adults do not meet the recommendations for physical activity globally (Tan et al., 2021). While, in this study, the mean \pm standard deviation for the total MET score was 1769.50 ± 1977.80 .

In this pandemic season, limitation of movement also could be one of the factors that lead to low physical activity practice as they are unable to do activities such as jogging, running and hiking due to COVID19 viral transmission. For those who are stuck in collage or hostel, they must stick with the institution's rules. The temporary closure of learning institutions and exercise facilities has further prevented individuals from complying with the WHO recommendation of moderate-to-vigorous activity (Tan et al., 2021).

Next factor that might influence the physical activity practice are limitation of time. This statement was supported by Ibrahim et al., (2013) whereby in the study, it was reported that 27.7% agreed that lack of time was one of the barriers to do physical activity. Not only that, in the finding, there were a few another reported barrier to practice physical activities such as the perception that other recreational activities with family and friends are more fun (38.6%), weather problem (34.7%), lack of discipline 29.8%), lack of money (27.5%), lack of friends 25.5%), the perception that physical activity is not beneficial to health (5.5%) and feeling ashamed (6.7%). Similar study done during Covid19 transmission in Malaysia by Syed Shiekh & Marathamuthu (2021) revealed the perception of physical activity and exercise whereby most of the participant which are 53% of male and 54.3% of female agreed that Covid19 outbreak has changed their perception toward physical activity and exercise.

5.2 Health-related quality of life among respondents

Based on the finding, mean for eight domains among undergraduate students in the study ranged from 48.68 (VT domain) to 84.61 (PF domain). Another study was done among medical students by Qiu et al., (2019) found that the means of eight dimensions in the study ranged from 43.83 (the RE dimension) to 93.34 (the PF dimension). On other study done among medical students, students with positive screenings for depressive symptoms had lower scores on all domains and summary components of the SF-36 compared with those with BDI scores (Peleias et al., 2017).

As a student, the prevalence of stress was quite high due to assignment workload, financial problem and other issues. This stress can affect the mental well-being and could finally affect their health-related quality of life since mental well-being is one of the aspects in health-related quality of life. As reported by Hirsch et al., (2009), lower mental HRQOL scores were strongly associated with increased stress and use of maladaptive coping strategies. By this statement, it strongly indicates that stress could lower the health-related quality of life in mental well-being aspects.

5.3 The relationship between demographic data and level of physical activity.

Based on the results shown in chapter 4, there was significant relationship between age, gender, and body mass index (BMI) with physical activity where the *p value* at 0.008, 0.000 and 0.040 respectively.

For age, there were some similar studies done among students and most of the study show there were significant relationship between age and physical activity practice among students. However, another study done by Lian et al., (2016) discovered that there are significant value with negative relationships between age and total physical activity, $r = -0.130$ ($N = 770$), $p < .01$, moderate activity, $r = -0.074$ ($N = 769$), $p < .05$, and vigorous activity, $r = -0.146$ ($N = 768$), $p < .01$. Bize et al., (2007) also reported that, the elderly was having poorer physical health than the younger population and lack physical strength and balance. By these findings, it shows that the older the person, the less they engage with

physical activity. This study only involved respondents age from 19 years old to 25 years old. Thus, this study found a positive correlation between age and level of physical activity.

For gender, mostly both female and male students were practicing moderate physical activity where it represents 61% and 40% respectively. However, it was reported that males were more active than female whereby only 12% of female were having high physical activity compared to male which was 34%. This finding were similar to a study done by Ge et al., (2019) which had found that females had significantly higher prevalence of low physical activity and higher sedentary time than males. Another study done by Rahman et al., (2020) revealed that, one of the factor of high sedentary behaviour were being a female. This finding were supported by Kokic et al., (2019), which revealed that the male respondents gained higher levels of vigorous-intensity physical activity in comparison to the female respondents (2400 ± 3120 vs. 480 ± 1920 MET-min/week; $p < 0.05$). A study done by Lian et al., (2016) shows that, there were significant difference between gender in physical activity level, $t(770) = 4.577$, $p < 0.01$. Males ($M = 13.41$, $SD = 5.892$) engaged in more physical activity than females ($M = 11.44$, $SD = 5.817$). In this study, only consists of 60 male respondent and majority were female respondent ($n=184$, 75.6%) and this could affect the result.

In the other hand, there were no significant relationship between ethnicity and physical activity where p value, 0.621. However, another study by Lian et al., (2016) revealed there is a significant positive relationship between Malay and total physical activity, $r_{pb} = .071$ ($N = 759$), $p < .05$, significant negative relationships between Chinese and total physical activity, $r_{pb} = -.101$ ($N = 759$), $p < .01$. However, significant relationships were not found for Indians in relation to total physical activity, $r_{pb} = -.008$ ($N = 759$), $p > .05$. This finding showed that, compared to other ethnics, Malays tend to engage more in overall physical activity and Chinese engaged less in all categories of physical activity compared to other ethnicities. In the other hand, this current study could not generalize the whole ethnicity since the prevalence of ethnic response in this study were not balance which consist of 93.4% of Malay respondents.

Besides, there were no significant relationship between CGPA where p -value, 0.933. Contradict to this finding, Yorks et al., (2017) found that fitness levels and moderate-to-vigorous physical activity have been positively correlated with academic performance. Another study was done by Kayani et al., (2020) where found a significant relationship of physical activity with academic anxiety ($p < 0.01$) which strongly agreed that CGPA can be influenced by physical activity practice.

Lastly, there were also a significant relationship between BMI and physical activity where p -value at 0.040. Baile et al., (2020) in their study discovered that there was a significant relationship between BMI and health-related quality of life (HRQoL) at p -value

0.019. It indicates that, the healthier the person, the more physical activity done throughout the week.

5.4 The relationship between demographic data and health-related quality of life

Based on the result, it shows that there is a significant relationship between age and social functioning (SF), where *p value* at 0.017. Social functioning is one of the physical components in health-related quality of life. However, study done among Australian patient by Jayasinghe et al., (2016) discovered that older patients which age ranged from 55 to 69 years tended to have higher mental health component scale in health-related quality of life than younger patients which aged from 40 to 54 years (effect size =0.33, $P < 0.05$).

For gender, there were no significant relationship with any domain of health-related quality of life. Contradict to this finding, a study done by Kokic et al., (2019) revealed that male students scored higher in the domains of general health, vitality, and social functioning. The only domain where female students scored higher was mental health. Another study also agreed that female students compared to male students had lower scores on the SF-36 Role Limitations-Emotional and Energy/Fatigue subscales ($p < .05$) (Spivey et al., 2020). This current result may be different due to limitation of male participation in this study where only consists of 60 males (24.6%).

In this study, it shows that BMI has significant relationship with social function (SF) and general health (GH) domain where *p value* at 0.016 and 0.007 respectively. This finding were supported by another study done by Kokic et al., (2019) shows that a weak positive relationship was found between students' BMI and the domains of role functioning/physical ($p < 0.05$; $r_s = 0.117$), role functioning/emotional ($p < 0.05$; $r_s = 0.142$), and vitality ($p < 0.05$; $r_s = 0.092$). However, further Tukey's HSD Test for multiple comparisons was done and found that the mean value of social function (SF) was significantly different between normal BMI and obese ($p = 0.011$). For general health (GH), found that the mean value was significantly different between normal BMI and overweight category ($p = 0.002$).

For ethnicity, it shows that it has strong relationship with role limitation due to emotional problem (RE) where *p-value* of 0.025. It shows that different ethnicity have different reactions towards role limitation when having emotional problem. Further Tukey's HSD Test for multiple comparisons was done and found that the mean value of role limitation due to emotional problem (RE) was significantly different between Malay and Indian ($p = 0.035$) and Chinese with Indian ($p = 0.016$) Correspond to this study, Shamsuddin et al., (2013) in their study revealed that Malay and Chinese students scored significantly higher than students from other ethnicity (minority) ($F(3,505) = 3.481$, $p = 0.016$). This current study was participated more by Malay where it comprised of 228 (93.4%) participants, followed by 9 (3.7%) Chinese participants.

For type of residential, it shows that it has significant relationship with physical functioning (PF) and general health (GH) where *p-value* at 0.025 and 0.017 respectively. Further Tukey's HSD Test for multiple comparisons was done and found that the mean value of physical function (PF) was significantly different between hometown and rental house ($p = 0.003$). Another Tukey's HSD Test was done and found that the mean value of general health was significantly different between parent's home and collage/hostel ($p = 0.002$). In other study, it was found that female gender, not living with family, living in a rented house, and lack of physical activity are factors known to be strongly associated with poor health-related quality of life (Lins et al., 2016). However, in this current study, most of the students (45.9%) are staying at home due to the Covid19 pandemic. So, they tend to have good health-related quality of life compared to students who stayed at the collage or not living with family.

For smoking status, it shows that it has significant relationship with energy and fatigue (VT), role limitation due to physical health (RP) and general health (GH) where *p value* at 0.033, 0.036 and 0.007 respectively. A study done by Jayasinghe et al., (2016) which discovered that, smoker patient tend to have low health literacy (12 % vs 6 %, $P = 0.005$). This shows that smoking behaviour can affect someone's health. Furthermore, smoking can cause respiratory problems either in short or long term that would finally affecting the smoker's general health and limit their role.

For risky health problem, it has strong and significant relationship with energy and fatigue (VT) aspects where *p-value* at 0.000. By this finding, it shows that a person who has risky health status such as asthma has high prevalence of fatigue. This could be due to low oxygen saturation or nocturnal awakenings during the acute exacerbations chronic asthma that will make the asthmatic patient feeling chronically tired and lethargic. In other study done among elderly in Sabah by Zin et al., (2016) and it was found that, there were significant relationship between vitality (VT) and bone and joint pain or arthritis as comorbidity (significant *p* value at 0.025). In the same study, it also revealed that there was a strong significant relationship between general health (GH) with arthritis, where *p-value* at 0.001. Thus, by these finding, risky health problem can influence someone's health-related quality of life state.

5.5 Relationship between physical activity and health-related quality of life.

According to the result, the lesser the physical activity practice, the poor the person's mental health and emotional well-being. From the results, it shows that there was a significant relationship between level of physical activity and emotional well-being (MH). Another study done by Asare & Danquah, (2015) discovered that there was a significant negative relationship between physical activity and depression ($r = -0.78$, $p < 0.001$) whereby it shows that person who had higher physical activity levels were less likely to report depressive symptoms. Another study done among adolescents in Hong Kong by Ho et al., (2015), found that mental well-being was found to have significant associations

with PA level ($r = 0.66$, $p < 0.001$). As agreed, physical activity is very helpful in improving someone mental health. Thus, the finding in this study correlate with this statement.

Besides, the result also shows the higher physical activity level, the higher the person's vitality state. This finding is supported by the result from a study by 17, whereby there was a positive relationship between vitality and vigorous-intensity PA ($p < 0.05$; $r_s = 0.161$), moderate-intensity PA ($p < 0.05$; $r_s = 0.097$). It can strongly indicate that the higher the physical activity level, the better the vitality state of the person.

Meanwhile, this study found that there were no significant association between physical activity and general health (GH). This finding was contradicted to a study by Qiu et al., (2019) stated that physical exercise level showed positive association with the general health (GH) dimension. A study done by Kokic et al., (2019) also revealed that general health was in a positive relationship with vigorous-intensity PA ($p < 0.05$; $r_s = 0.121$), moderate-intensity PA ($p < 0.05$; $r_s = 0.103$) which contradict to this study.

This study also found that there were no significant association between the level of physical activity with physical functioning (SF), role limitation due to physical problem (RP), role limitation due to emotional problem (RE), bodily pain (BP) and social function (SF). However, contradicting to this study, in another study done by Syed Shiekh & Marathamuthu, (2021) among Malaysian found that most of the participants agreed that physical activity help in physical and mental health status during Covid19 outbreaks

whereby 60.4% males and 67.1% of female participants. It shows that, by having physical practice physical and mental functioning can be improved.

5.6 Conclusion

The study of association between the level of physical activity and mental health and vitality state among undergraduate students by using self-administered structured questionnaire were found to be positively correlated. This study also found that factors such as age, gender and BMI could affect the level of physical activity of the students. Plus, this study also found that factors such as age, ethnicity, type of residential, smoking, cumulative grade point average (CGPA), body mass index (BMI) and risky health problem could affect the health-related quality of life among the students. The findings of this study provide an additional baseline information for the university authorities regarding the health-related quality of life among their students. Also, it could help to improve the health education regarding the impact of physical activity towards health-related quality of life among university students.

CHAPTER 6

LIMITATION AND RECOMMENDATION

6.1 Limitation

This was a simple cross-sectional study that had been conducted within a short period of time. There were several limitations were found in this study that need to be acknowledged. Firstly, this study was done during pandemic COVID-19 and movement control ordered (MCO) enforcement. So, it will affect the physical activity practice of the students as they were not allowed to go outside and do outdoor physical activities such as running and jogging. Students that were stranded at collage and hostel were affected as they were not allowed to do physical activity even in the collage area. So, they might have low physical activities during this pandemic season.

The second limitation was when respondents do not remember the previous physical activities done within seven days accurately. For example, respondents do not remember the exact days and duration they do the physical activities. It helps if the activities were recorded. Therefore, this study exposed some tendency of recall bias have occurred during collecting data which may affect the accuracy of the resulting data.

The third limitation was the limitation to reach the respondents especially during this pandemic season. It will be easier to reach respondents by using face to face session

and use the hardcopy questionnaire. For this study, only online platforms were used by the researcher such as Whatsapp, Facebook and Telegram to reach the participants. The respondents can easily ignore the invitation to join this study that will lead to less response rate. As the result, this study only fulfilled about 65% of the sample size needed.

6.2 Recommendations

The finding of this study shows that there were strong significant association between level of physical activity with health-related quality of life especially in mental health and vitality aspects. Based on the results shown in chapter 4, only 17.6% of the student achieved high physical activity level while half of them were having moderate level of physical activity. Universities authorities should play important roles in encouraging students to practice adequate physical activities as recommended by World Health Organization (WHO). Plus, they should cooperate with the University Medical Centre (PKU) to recognise students with mental health problems related to sedentary lifestyle by doing screening and provide help for those who in need. This cooperation also can plan for an organization of physical exercise program to spread the awareness about the importance of physical activity toward the status of health-related quality of life. Through this, mental health problem related to sedentary lifestyle including low physical activity among student can be prevented.

In the future studies, it is recommended to include more other factors that could affect the level of physical activity and health-related quality of life of the students such as family income, academic performance, sleep quality and any social issues. A study that only focuses on the staff nurses should be done on measuring their level of physical activity and health-related quality of life. This is because, nursing often associated with lack of time to do physical activity and the 'burnout' issues. In future studies too, it is recommended to use more comprehensive techniques such as face to face interview session in order to get appropriate response and to achieve the sample size efficiently, since this study use online survey and it limits the response rate from the respondents. it is recommended to include more factors that may affect the physical activity levels and health-related quality of life among students such as family income, sleep quality, academic performance and others.

Lastly, the researcher may use the long version of IPAQ for future studies on the level of physical activity as it could analyse job-related domain, transportation domain, housework domain, recreation, sports and leisure time domain and also sitting domain more specifically by using more comprehensive technique such as face to face interview session to get more participants since lower number of participants in online survey techniques.

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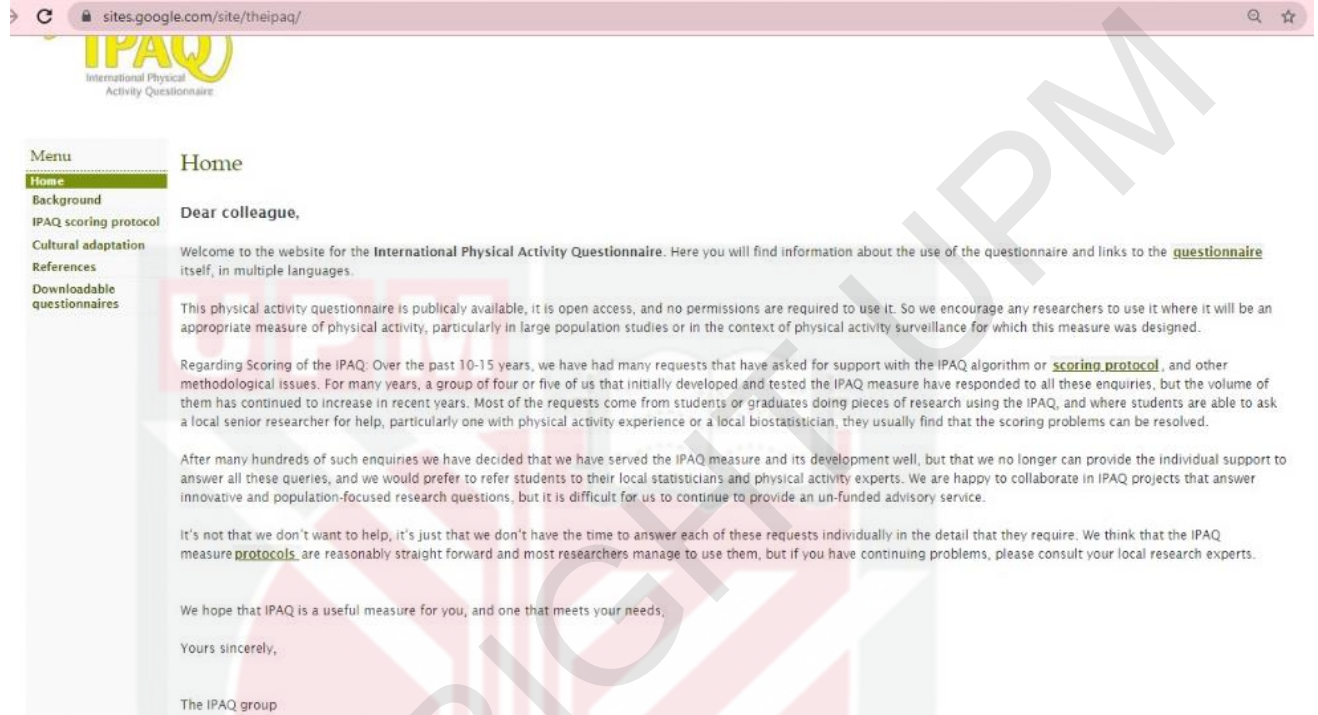
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APPENDICES

Appendices 1a: Permission to use International Physical Activity Questionnaire



The screenshot shows a web browser window with the URL `sites.google.com/site/theipaq/`. The page header features the IPAQ logo and the text "International Physical Activity Questionnaire". A left-hand menu lists: Home, Background, IPAQ scoring protocol, Cultural adaptation, References, and Downloadable questionnaires. The main content area is titled "Home" and begins with "Dear colleague,". The text explains that the questionnaire is publicly available and open access, but due to the volume of requests for support, the IPAQ group can no longer provide individual assistance. It encourages researchers to consult local experts for scoring issues. The letter concludes with "Yours sincerely," and "The IPAQ group".

Menu

- Home
- Background
- IPAQ scoring protocol
- Cultural adaptation
- References
- Downloadable questionnaires

Home

Dear colleague,

Welcome to the website for the **International Physical Activity Questionnaire**. Here you will find information about the use of the questionnaire and links to the [questionnaire](#) itself, in multiple languages.

This physical activity questionnaire is publicly available, it is open access, and no permissions are required to use it. So we encourage any researchers to use it where it will be an appropriate measure of physical activity, particularly in large population studies or in the context of physical activity surveillance for which this measure was designed.

Regarding Scoring of the IPAQ: Over the past 10-15 years, we have had many requests that have asked for support with the IPAQ algorithm or [scoring protocol](#), and other methodological issues. For many years, a group of four or five of us that initially developed and tested the IPAQ measure have responded to all these enquiries, but the volume of them has continued to increase in recent years. Most of the requests come from students or graduates doing pieces of research using the IPAQ, and where students are able to ask a local senior researcher for help, particularly one with physical activity experience or a local biostatistician, they usually find that the scoring problems can be resolved.

After many hundreds of such enquiries we have decided that we have served the IPAQ measure and its development well, but that we no longer can provide the individual support to answer all these queries, and we would prefer to refer students to their local statisticians and physical activity experts. We are happy to collaborate in IPAQ projects that answer innovative and population-focused research questions, but it is difficult for us to continue to provide an un-funded advisory service.

It's not that we don't want to help, it's just that we don't have the time to answer each of these requests individually in the detail that they require. We think that the IPAQ measure [protocols](#) are reasonably straight forward and most researchers manage to use them, but if you have continuing problems, please consult your local research experts.

We hope that IPAQ is a useful measure for you, and one that meets your needs,

Yours sincerely,

The IPAQ group

Appendices 1b: Permission to use The 36-Item Short Form Survey (SF36)

RAND > RAND Health Care > Surveys > RAND Medical Outcomes Study > 36-Item Short Form Survey (SF-36) >

Terms and Conditions for Using the 36-Item Short Form Survey (SF-36)

RAND hereby grants permission to use RAND 36-Item Short Form Health Survey in accordance with the following conditions, which shall be assumed by all to have been agreed to as a consequence of accepting and using this document:

1. Changes to the Health Survey may be made without the written permission of RAND. However, all such changes shall be clearly identified as having been made by the recipient.
2. The user of this Health Survey accepts full responsibility, and agrees to indemnify and hold RAND harmless, for the accuracy of any translations of the Health Survey into another language and for any errors, omissions, misinterpretations, or consequences thereof.
3. The user of this Health Survey accepts full responsibility, and agrees to indemnify and hold RAND harmless, for any consequences resulting from the use of the Health Survey.
4. The user of the 36-Item Health Survey will provide a credit line when printing and distributing this document acknowledging that it was developed at RAND as part of the Medical Outcomes Study.
5. No further written permission is needed for use of this Health Survey.

RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

1. Study title :

A Cross Sectional Study on The Association Between Physical Activities Practice and Health Related Quality of Life Among Undergraduate Students in Public University in Malaysia.

2. Introduction:

Physical activity is one of the way to practice a healthy lifestyle. Practicing healthy lifestyle among student are important as is can contribute to a good state of health especially in mental and physical health. However, there is a number of student that still practicing a sedentary lifestyle. Thus, this research are helping to spread the awareness about the importance of practicing physical activity toward health related quality of life.

3. What will you have to do?

You have to fulfill all the inclusion criteria and to sign the agreement to participate in this study. The data will be collected based on sociodemographic background , physical activity practice and health-related quality of life. All of these will be assessed by questionnaires by researcher.

4. Who should not participate in the study?

- i) The participant is an international student.
- ii) Mobility programme students
- iii) Currently under medical leave for serious condition.

5. What will be the benefits of the study:

(a) To you as the subject?

The benefits that the subject will get are the awareness to practice the physical activity in their daily life. They also will know that there is a relation between physical activity practice towards their health-related quality of life.

(b) To the investigator?

The data that are collected through this study can provide information regarding

the health-related quality of life among students and the relationship with physical activity practice. The investigator also will get information about the factor that contribute to low health-related quality of life among students.

6. What are the possible risks?

Since this study is only using the questionnaire, it has a minimal risk.

7. Will the information that you provide and your identity remain confidential?

All of the data that are collected from this study will kept as private and confidential including participant's information. Only researcher and the supervisor are allowed to assess the information.

8. Who should you contact if you have additional questions during the course of the research?

If you have any quiry or some questions from the research, you can contact me during working hours or my supervisor.

Sincerely,

Nabila Nuraina binti Norazlee,

Student researcher,

Department of Nursing,

Faculty of Medicine and Health
Sciences,

Universiti Putra Malaysia,

43400 Serdang,

Selangor Darul Ehsan

Phone : 013-3020598

Email : bieylaanzam@gmail.com

Puan Siti Aishah binti Hamzah

Supervisor,

Department of Nursing,

Faculty of Medicine and Health
Sciences,

Universiti Putra Malaysia,

43400 Serdang,

Selangor Darul Ehsan

Phone: 019-3309751

Email : aishahs.hamzah@upm.edu.my

RISALAH MAKLUMAT PESERTA

1. Tajuk kajian:

Kajian Rentas: Hubungan antara amalan fizikal aktiviti dengan kualiti hidup berkaitan dengan kesihatan antara pelajar sarjana muda di universiti awam di Malaysia.

2. Pengenalan:

Aktiviti fizikal adalah salah satu cara untuk mengamalkan gaya hidup sihat. Mengamalkan gaya hidup sihat di kalangan pelajar adalah penting kerana dapat menyumbang kepada keadaan kesihatan yang baik terutama kesihatan mental dan fizikal. Walau bagaimanapun, terdapat sebilangan pelajar yang masih mengamalkan gaya hidup yang tidak aktif. Oleh itu, penyelidikan ini membantu menyebarkan kesedaran mengenai pentingnya mempraktikkan aktiviti fizikal ke arah kualiti hidup yang berkaitan dengan kesihatan.

3. Apakah yang perlu anda lakukan?

Anda harus memenuhi semua kriteria yang diperlukan dan menandatangani perjanjian untuk mengambil bahagian dalam kajian ini. Data akan dikumpulkan berdasarkan latar belakang sosiodemografi, amalan aktiviti fizikal dan kualiti hidup yang berkaitan dengan kesihatan. Semua ini akan dinilai melalui soal selidik oleh penyelidik.

4. Siapa yang tidak boleh menyertai kajian?

- i) Peserta adalah pelajar antarabangsa.
- ii) Pelajar program mobiliti
- iii) Sedang dalam cuti perubatan kerana keadaan serius.

5. Apakah faedah menyertai kajian ini:

(a) Kepada anda sebagai peserta?

Manfaat yang akan diperoleh subjek adalah kesedaran untuk mempraktikkan aktiviti fizikal dalam kehidupan seharian. Mereka juga akan mengetahui bahawa terdapat hubungan antara amalan aktiviti fizikal dengan kualiti hidup mereka yang berkaitan dengan kesihatan.

b) Kepada penyelidik?

Data yang dikumpulkan melalui kajian ini dapat memberikan maklumat mengenai kualiti hidup yang berkaitan dengan kesihatan di kalangan pelajar dan hubungannya dengan latihan aktiviti fizikal. Penyelidik juga akan mendapat maklumat mengenai faktor yang menyumbang kepada kualiti hidup yang

berkaitan dengan kesihatan yang rendah di kalangan pelajar.

6. Adakah ia berisiko?

Oleh kerana kajian ini hanya menggunakan soal selidik, ia mempunyai risiko yang minimum.

7. Adakah maklumat yang saya beri dan identiti saya akan kekal sulit?

Semua data yang dikumpulkan dari kajian ini akan disimpan sebagai rahsia termasuk maklumat peserta. Hanya penyelidik dan penyelia sahaja yang dibenarkan untuk menilai maklumat tersebut.

8. Siapa yang perlu saya hubungi jika mempunyai memiliki soalan tambahan selama tempoh penyelidikan?

Sekiranya anda mempunyai pertanyaan atau beberapa pertanyaan dari penyelidikan, anda boleh menghubungi saya atau penyelia saya semasa waktu bekerja.

Yang benar,

Nabila Nuraina binti Norazlee,

Penyelidik (Pelajar),

Jabatan Kejururawatan,

Fakulti Perubatan dan Sains Kesihatan,

Universiti Putra Malaysia,

43400 Serdang,

Selangor Darul Ehsan

Nombor : 013-3020598

Emell : bieylaanim@gmail.com

Puan Siti Aishah binti Hamzah

Penyelia,

Jabatan Kejururawatan,

Fakulti Perubatan dan Sains Kesihatan,

Universiti Putra Malaysia,

43400 Serdang,

Selangor Darul Ehsan

Nombor: 019-3309751

Emel : aishahs.hamzah@upm.edu.my

Appendices 3: Questionnaire



UNIVERSITI PUTRA MALAYSIA

FACULTY OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF NURSING

BACHELOR OF NURSING

QUESTIONNAIRE

TITLE:

**A CROSS SECTIONAL STUDY ON THE ASSOCIATION BETWEEN
PHYSICAL ACTIVITIES PRACTICE AND HEALTH RELATED QUALITY OF
LIFE AMONG UNDERGRADUATE STUDENTS IN PUBLIC UNIVERSITY IN
MALAYSIA.**

NAME : NABILA NURAINA BT NORAZLEE

SUPERVISOR : PN SITI AISHAH BINTI HAMZAH

INSTRUCTIONS:

This study is conducted for academic purposes. All information will be kept private and confidential. Thank you for your cooperation in answering the questionnaire.

QUESTIONNAIRE (ENGLISH)

SECTION A: SOCIODEMOGRAPHICS		
<i>Instructions: Please answer all questions by marking (√) or write the appropriate answer.</i>		
BIL	ITEM	
A1	Age years old
A2	Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
A3	Ethnicity	<input type="checkbox"/> Malay <input type="checkbox"/> India <input type="checkbox"/> Chinese <input type="checkbox"/> Other
A4	Cumulative Grade Point Average (CGPA)	<input type="checkbox"/> 3.5-4.0 <input type="checkbox"/> 3.0-3.49 <input type="checkbox"/> 2.5-2.99 <input checked="" type="checkbox"/> 2.0 -2.49 <input type="checkbox"/> Below than 2.0
A5	University	<input type="checkbox"/> Universiti Kebangsaan Malaysia (UKM), <input type="checkbox"/> Universiti Malaya (UM), <input type="checkbox"/> Universiti Putra Malaysia (UPM), <input type="checkbox"/> Universiti Teknologi Mara (UiTM), <input type="checkbox"/> Universiti Sains Islam Malaysia (USIM), <input type="checkbox"/> Universiti Sultan Zainal Abidin (UNISZA), <input type="checkbox"/> Universiti Tun Hussein Onn (UTHM), <input type="checkbox"/> Universiti Malaysia Terengganu (UMT) <input type="checkbox"/> Universiti Teknikal Malaysia (UTem).
A6	Height cm
A7	Weight kg
A8	Smoking	<input type="checkbox"/> Yes <input type="checkbox"/> No
A9	Risky Health Problem	<input type="checkbox"/> Yes <input type="checkbox"/> No
A10	Alcohol Intake	<input type="checkbox"/> Yes <input type="checkbox"/> No

SECTION B
INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE (IPAQ)

Instructions: Please answer all questions by writing the number of days and minutes.

The questions will ask you about the time you spent being physically active in the last 7 days . Please answer each question even if you do not consider yourself to be an active person.		DAYS	MINUTES	NO/NOT SURE
B1	During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?			
B2	How much time did you usually spend doing vigorous physical activities on one of those days?			
B3	During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.			
B4	How much time did you usually spend doing moderate physical activities on one of those days?			
B5	During the last 7 days, on how many days did you walk for at least 10 minutes at a time?			
B6	How much time did you usually spend walking on one of those days?			
B7	During the last 7 days, how much time did you spend sitting on a weekday?			

SECTION D: SHORT FORM 36 (SF-36)

Developed at RAND as part of the Medical Outcomes Study.

Please answer the 36 questions of the **Health Survey** completely, honestly, and without interruptions.

PART 1: GENERAL HEALTH

In general, would you say your health is:	<input type="checkbox"/> Excellent <input type="checkbox"/> Very Good <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor
Compared to one year ago, how would you rate your health in general now?	<input type="checkbox"/> Much better now than one year ago <input type="checkbox"/> Somewhat better now than one year ago <input type="checkbox"/> About the same <input type="checkbox"/> Somewhat worse now than one year ago <input type="checkbox"/> Much worse than one year ago

PART 2: LIMITATION OF ACTIVITIES

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much? <i>(please tick at the appropriate box)</i>	Yes, Limited a lot	Yes, Limited a Little	No, Not Limited at all
Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.			
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf			
Lifting or carrying groceries			
Climbing several flights of stairs			
Climbing one flight of stairs			
Bending, kneeling, or stooping			
Walking more than a mile			
Walking several blocks			
Walking one block			
Bathing or dressing yourself			

PART 3: PHYSICAL HEALTH PROBLEMS

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?	YES	NO
---	------------	-----------

<i>(please tick at the appropriate box)</i>						
Cut down the amount of time you spent on work or other activities						
Accomplished less than you would like						
Were limited in the kind of work or other activities						
Had difficulty performing the work or other activities (for example, it took extra effort)						
PART 4: EMOTIONAL HEALTH PROBLEMS						
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)? <i>(please tick at the appropriate box)</i>	YES	NO				
Cut down the amount of time you spent on work or other activities						
Accomplished less than you would like						
Didn't do work or other activities as carefully as usual						
PART 5: SOCIAL ACTIVITIES						
Emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?	<input type="checkbox"/> Not at all <input type="checkbox"/> Slightly <input type="checkbox"/> Moderately <input type="checkbox"/> Severe <input type="checkbox"/> Very Severe					
PART 6: PAIN						
How much bodily pain have you had during the past 4 weeks?	<input type="checkbox"/> None <input type="checkbox"/> Very Mild <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe <input type="checkbox"/> Very Severe					
During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	<input type="checkbox"/> Not at all <input type="checkbox"/> A little bit <input type="checkbox"/> Moderately <input type="checkbox"/> Quite a bit <input type="checkbox"/> Extremely					
PART 7: ENERGY AND EMOTIONS						
These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling. <i>(please tick at the appropriate box)</i>	All of the time	Most of the time	A good Bit of the Time	Some of the time	A little bit of the time	None of the Time

Did you feel full of pep?						
Have you been a very nervous person?						
Have you felt so down in the dumps that nothing could cheer you up?						
Have you felt calm and peaceful?						
Did you have a lot of energy?						
Have you felt downhearted and blue?						
Did you feel worn out?						
Have you been a happy person?						
Did you feel tired?						

PART 8: SOCIAL ACTIVITIES

<p>During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?</p>	<input type="checkbox"/> All of the time <input type="checkbox"/> Most of the time <input type="checkbox"/> Some of the time <input type="checkbox"/> A little bit of the time <input type="checkbox"/> None of the Time
---	--

PART 9: GENERAL HEALTH

How true or false is each of the following (please tick at the appropriate box)	Definit ely true	Mostly true	Don't know	Mostly false	Definit ely false
I seem to get sick a little easier than other people					
I am as healthy as anybody I know					
I expect my health to get worse					
My health is excellent					

Appendices 4: Approval from Jawatankuasa Etika Untuk Penyelidikan Melibatkan Manusia (JKEUPM)

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)

Date: 7 March 2021

Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled '**A Cross Sectional Study on the Association Between Physical Activities and Health Related Quality of Life among Undergraduate Students in Public University in Malaysia**' has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (<http://www.tncpi.upm.edu.my/faildokumen>).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia, Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction:- **JKEUPM-2021-088**

Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi

Chair

Ethics Committee for Research Involving Human Subjects

Universiti Putra Malaysia

Appendices 5: Budget

No.	Items/Indication	Price per quantity	Amount (RM)
1	Miscellaneous		
	Internet & Phone Bill (during the study)	RM 100	RM 100
	Total	-	RM 100

Appendices 6: Gantt Chart

.Bil	Year Project activities	2020			2021								
		Oct	Nov	Dec	Jan	Feb	Mac	April	May	June	July	August	September
1	Identify research problem												
2	Preparing draft proposal												
3	Obtain permission												
4	Gather relevant information												
5	Proposal preparing & presentation												
6	Data collection												
7	Data analysis												
8	Discussion of data												
9	Thesis preparation & presentation												
10	Submission research report												