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Relationship between Physical Self-Description, Physical Activity and Mental Health among Community Dwelling Elderly

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Abstract
Perception of the physical self may influence physical activity behavior among the elderly. Thus, this study aims to determine the relationship between physical self-description, level of physical activity, and mental health status among 112 community-dwelling elderlies. Participants completed questionnaires assessing physical and global self-description (PSDQ), the physical activity scale for the elderly (PASE), and the depression, anxiety, and stress scale (DASS-21). Findings showed that physical self-description was associated with physical activity and mental health status. In conclusion, the belief system of the elderly ideally needs to be taken into consideration when designing interventions that aim to enhance physical activity behavior.

Keywords: Elderly, Physical activity, Physical self-description Mental Health

1.0 Introduction
Being an older adult is a natural phase of the aging process as life goes on. Up until 2019, the percentage of elderly population in Malaysia who aged 60 years and above is 6.7%. The number keeps increasing rapidly, and it was expected to reach 14.5% in 2040 (Nabihah et al., 2021). In line with increasing age, people are more prone to face both physical and mental health issues. And this matter had become a concern to the government and all healthcare physicians.

Among the least emphasized health problems among the elderly are mental health problems. According to the World Health Organization (WHO), mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". Hence, problems with one of these features can lead to mental problems. The WHO (2019) also stated that mental disorders including depression, bipolar disorder, schizophrenia, and other psychoses, dementia, and developmental disorders.

Therefore, to ensure and maintain the physical and mental health, any form of physical activity is strongly recommended to be practiced among the elderly such as walking, hiking, jogging, running, cycling, and gardening. As it is often advertised, regular physical activity indeed brings us a lot of benefits physically and mentally. Unfortunately, the awareness on the importance of performing physical activity especially in preventing the mental health problems among the elderly still not enough. Majority of the elderly physically inactive could be due to a few barriers including poor health (Moschy,2011) , lack of motivation (Rai et al., 2019) and lack of knowledge to exercise (Manaf H 2013)

In general, each individual has their own views and thoughts regarding exercise activities. As stated by Sales et. al., (2017), individual characteristics or also known as person-specific attributes is one of the factors related to the level of individual involvement in physical activity. It includes demographic variables, physical health, and psychological factors such as motivation and locus of control. Therefore, self-perception and self-esteem would affect their confidence to engage in physical activity. It also explains that the diversity in education level, health level, and social status of an individual can influence their views on the importance of physical activity. Hence, individuals with a good perception of themselves and exercise activities have a higher probability of engaging in them. Aging is often associated with a variety of illnesses either physically or mentally. In fact, it gets worse over time so it becomes a concern and a burden to many parties. In the context of mental health issues, statistic shows that the total number of patients who visit a specialized geriatric psychiatric clinic in Malaysia in 2014 is 382,590. And the number is increased by 16.4% in 2015 make the total individuals with mental health is 445,335 (Abdul Kadir, 2017). Among them, there are also those who suffer from depression. According to Karniza et al., (2021) depression was responsible for 5.7% of all Years Lost Due to Disability (YLD) among people aged 60 and over.

Besides that, the physical health of the elderly is also said to be declining. Also, previous evidence supported by Teh et al., (2012) stated that among Malaysian adults aged 16 and above, only 64.3% of them were physically active and the participation level in physical activity are decreased as the age increase. Therefore, other than mental health issues, it was reported by Westcott (2012) that inactive adults also experienced a 3% to 8% muscle mass loss per decade. In the context of physical self-perceptions, there was no relevant statistics found. This shows that there is still no extensive study on the importance of physical self-concept among older people in Malaysia. Thus, this study was conducted aimed at exploring new knowledge and understanding of the relationship between physical and mental of a person.

2.0 Literature Review

In regard to previous studies, a conceptual framework model as shown in Figure 1.0 is illustrated and proposed. In this framework, physical self- perception, participation in physical activities and mental health status can act as both predictor and outcome variables. Reviewing the previous study that discuss on relationship between self-perception, physical activities and mental health status among elderly was able to help me make initial hypotheses in my study. In instance, good physical self-perception may increase the participation in physical activity which has positive effect on managing mental health and depression among elderly and vice versa. On the other hand, increase participation in physical activities may improve mental status among elderly and thus enhance their physical self-description. The relationship between all variables may revolve around each other. I also found that there are quite a lot of articles that support positive relationship whether between physical self-description, physical exercises or mental health issues. However, most of the articles did not examine the relationship of the three variables simultaneously.

In the context of the relationship between self-perception and physical activity, several previous studies have been conducted. For example, the outcomes of study by Sales et. al., (2017) provides convincing evidence that when designing treatments to improve physical activity behavior or reduce fear of falling, older individuals' belief systems should be taken into account. This study required the subjects to complete set of questionnaires assessing fear of falling, physical self-perceptions and physical activity level. They also need to perform physical function tests including hand grip strength, sit-to-stand test and assessment of gait speed. Results shows that physical self-perceptions such as activity, coordination, endurance, and flexibility were linked to self-reported intentional and incidental physical activity. There were also links between several of the objectively assessed physical functioning factors and physical self-perceptions, giving the PDSQ some predictive validity.
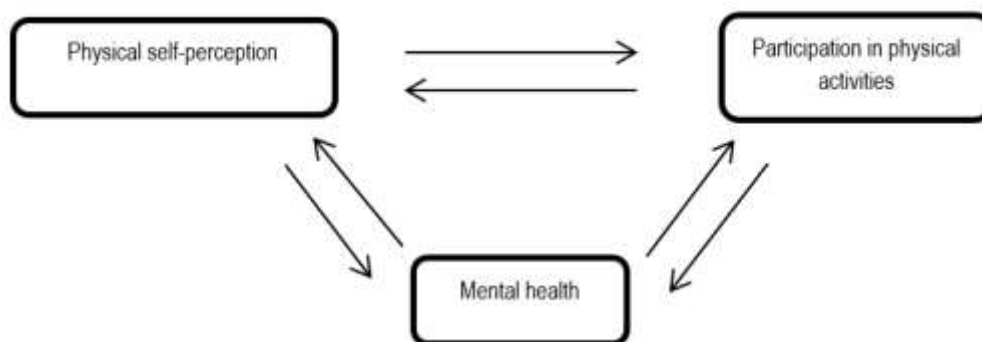

Figure 1.0 Conceptual framework of relationship between participation in physical activities and mental health

This statement is supported by study from Choi et. al., (2017) who reported that participation in physical activity was linked to a variety of personal and environmental factors. Self-efficacy was the most important personal factor in physical activity engagement based on their systematic review study. For example, it is strongly tied with intention to exercise, outcome expectations, perceived behavioral control, and perceived fitness. Meanwhile, age and poor state of health or fitness adversely correlated with it (Choi et. al., 2017).

Similar study findings have been identified in the systematic reviews study by Notthoff et. al., (2017), which includes 63 full-text articles regarding individual characteristics and physical activity among elderly. They stated that among demographic variable, gender was the most commonly examined in the previous studies followed by education, marital status, employment and health. Moreover, in psychological

factor, self-efficacy was mentioned most frequently followed by locus of control and motivation (Notthoff et. al., 2017). All the factors listed are factors that can affect an individual's self-perception physically and mentally especially among elderly. Therefore, indirectly it can also affect their behavior towards physical activity.

On the other hand, current evidences stated the positive the relationship between physical activity and mental health. For instance, Schuch et. al., (2018) in their meta-analyses of prospective cohort studies stated that physical activity, regardless of age or geographic location, appears to protect against the onset of depression, according to available research. A total of 49 unique prospective studies (N= 266,939) included which were followed up by 1,837,794 person-years can be said to be strong evidence to support the notion that those who engaged in high levels of physical exercise had a lower risk of depression than those who engaged in low levels. Furthermore, physical activity also exhibited a protective impact against the onset of depression in children, adults, and the elderly (Schuch et. al., 2018).

3.0 Methodology

This study was conducted using cross-sectional study design with a total of 122 completed an online questionnaire. The survey was administered in Selangor, Malaysia. The target respondent to participate in this study is based on inclusion and exclusion criteria. The inclusion criteria were lives in Selangor, Malaysia, age 60 years old or above, living in the community-dwelling. Meanwhile exclusion criteria are; bed ridden, people with severe medical condition that aggravated during physical activity for example asthma, heart problems and refusal. The sampling design used is non-probability sampling which is self-selection sampling method. Questionnaire using Google form was distributed through online platform such as WhatsApp and Facebook. Participation in completing the survey is voluntary and people may refuse to take part. As the target respondent are elderly who may not know how to use media social, caregivers are strongly encouraged to help and guide them in completing the questionnaire.

3.1 Instruments

Demographic form is questions provided to gain background information of the participants. It is important as baseline measurement to make sure whether the respondent is eligible to take part in the survey or not. Demographic data required such as age, gender, marital status, address, and underlying medical conditions.

The physical and global self-description (PSDQ-S) was used in tthus study. It includes nine physical self-concept elements or scales – Activity, Appearance, Body Fat, Coordination, Endurance, Flexibility, Health, Sport, Strength – as well as two global measures – Global Physical and Global Esteem. Each scale has six or eight items, each of which is given as a declarative statement to which participants can react on a six-point true-false scale (Peart et al., 2005). 40 of 70 items were selected to construct a new short form (PSDQ-S).

The physical activity for elderly scales (PASE) was used in this study. PASE is a validated 12-item self-administered questionnaire that evaluates the types of activities that elderly individuals commonly engage in (walking, leisure activities, exercise, housework, yard work, and caring for others, to name a few). It assigns a number ranging from 0 to 793 based on the frequency, duration, and intensity degree of activity over the past week, with higher values indicating more physical activity (Logan et al., 2013).

The Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) was used in this study and it is a collection of three self-report scales that assess depression, anxiety, and stress. Each of the three DASS-21 scales has seven items that are grouped into subscales that have comparable content (Nordin et.al., 2017).

3.2 Statistical Analysis

Descriptive data was analysed using Statistical Package for the Social Sciences (SPSS) version 22 and presented in terms of percentage, mean and standard deviation. Next, correlation analysis will be used to determine the relationship between physical self-description, level of physical activity and mental health status among community-dwelling elderly.

3.3 Ethical consideration

Ethical approval was obtained from UiTM Research Ethics Committee before data collection process. All the elderly were toldabout the study objectives,and had their consent. They were also informed that their involvement in the study was voluntary and that they were fully capable of making their own decisions as well as not subjected to any guardianship law. They were able to understand all the rules in this study and have the right to withdraw from this study.

4.0 Results

The total participants are 112 elderly consisting of 56 males and 56 females. 82% of the participants are married and the rest are single due to divorce or the death of partner. For occupation status, 24.1% (n=27) are housewife, 64.3% (n=72) are still working and another 11.6% (n=13) had retired. 19.6% (n=22) of participants were diagnosed with medical illnesses such as asthma, diabetes, hypertension, heart problems, dyslipidemia and else, meanwhile another 80.4% (n=90) of them had no medical illnesses. See Table 1.0.

The mean of DASS-21 scores on depression item is 10.96±11.55, anxiety score is 11.79±10.58 and stress score is 13.89±10.67. It indicates that participants are under mild depression, moderate anxiety and normal level of stress. Mean for total DASS scores is 36.64±31.18 which indicates normal mental health status among participants. See Table 2.0.

The overall PSDQ-S score is 4.15±0.8 and most of the PSDQ-S scales scores above midpoint scale except for endurance scales. The highest score was on global physical scale which is (4.63±1.31) and the lowest score was on the endurance scale which is 3.49±1.32. Participants in the study showed a tendency toward a positive physical self-concept. See Table 3.0.

The mean of PASE score among participants is 153.47±87.96 which indicates high level of physical activity among the elderly. The result shows there is a significant ($p < 0.01$), positive and fair correlation ($r=0.44$) between physical activity level and physical self-description. Meanwhile, there is a significant ($p < 0.05$), negative and weak correlation ($r=-0.24$) between physical activity level and mental health status. Also, there is a significant ($p < 0.01$), negative and fair correlation ($r=-0.42$) between physical self-description and mental health status among the elderly.

Table 1.0. Characteristics of the participants

Characteristics		Frequencies (%)	Mean±SD
Age			64.0±3.00
Gender	Male	56 (50.0)	
	Female	56 (50.0)	
Races	Malay	108 (96.4)	
	Indian	3 (2.7)	
	Others	1 (0.9)	
Educational status	None	6 (5.4)	
	Primary	3 (2.7)	
	Secondary	51 (45.5)	
	University	52 (46.4)	
Marital status	Married	92 (82.1)	
	Divorced	8 (7.1)	
	Widowed	12 (10.7)	
Occupational status	Housewife	27 (24.1)	
	Retired	13 (11.6)	
	Self-work	72 (64.3)	
Medical illness	Yes	22 (19.6)	
	No	90 (80.4)	

Table.2.0 Descriptive statistics for the (A) DASS-21 scores and (B) the PSDQ-S scores

	Level	Mean	SD
(A) DASS-scores			
Depression	Normal	10.96	11.55
	Mild		
	Moderate		
	Severe		
	Extremely severe		
Anxiety	Normal	11.79	10.58
	Mild		
	Moderate		
	Severe		
	Extremely severe		
Stress	Normal	13.89	10.67
	Mild		
	Moderate		
	Severe		
	Extremely severe		
Overall	Normal	36.64	31.18
	Mild		
	Moderate		
	Severe		
	Extremely severe		

(B) PSDQ-S scores

	Health	4.49	0.10
	Coordination	4.58	0.95
	Activity	3.54	1.32
	Body fat	3.68	1.69
	Sport	3.90	1.33
	Global physical	4.63	1.31
	Appearance	4.13	1.32
	Strength	4.40	1.04
	Flexibility	3.94	1.02
	Endurance	3.49	1.32
	Global esteem	4.37	1.00
	Overall score	4.15	0.80

Table 4 Pearson correlation coefficient between mental status, level of physical activity and level of self-description (N=112)

	PASE	PSDQ-S	DASS
PASE	1		
PSDQ-S	0.44**	1	
DASS	-0.24*	-0.42**	1

** correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)
Note: PASE (level of physical activity), PSDQ-S (level of self-description), DASS (level of mental status)

5.0 Discussions

The mean of DASS-21 scores results show that participants are under mild depression, moderate anxiety and normal level of stress. Mean for total DASS scores did not reach cut off point which is 60 indicates good mental health status among participants. However, according to Abdul et. Al., (2016), mental health issues among Malaysian elderly especially in rural areas were alarming with prevalence of depression, anxiety and stress by 27.8%, 22.6% and 8.7% respectively. The author stated among the factors that may contribute to these mental problems are loneliness such as no partner due to unmarried, divorced or widowed, living alone and poor general health. Meanwhile, this study resulted in good mental health status among elderly may be caused by good participants characteristics such as most of them are married (n=92) and have good general health/ without medical illnesses (n=90).

Participants in the study showed a tendency toward a positive physical self-concept, as they scored above the midpoint of the rating scale in the overall score and most of the PSDQ-S scales except for endurance scales. However, the scores were not too significantly different from each other. The scores were acquired after reverse scoring the required questions. The highest score was obtained from global physical scales (4.63±1.31), meanwhile the lowest score was from endurance scales (3.49±1.32).

The high score in global physical subscales is not surprising, despite the fact that it was not predicted a priori. This is because, according to Marsh et. al., (2010), there is strong evidence that self-esteem levels drop during childhood and early adolescence, level out around middle adolescence, and then rise into adulthood. Plus, Clark (2002) reported that age may have positive effects on individual's self-concept. Someone may feel satisfied with what he or she has accomplished in life. They may be proud of their accomplishments to date, such as a promotion at work, a life change such as marriage or have children, owning their own home and else. Furthermore, most of the participants are highly educated which may increase their sense of achievements.

Concurrently, age may negatively influence individual's health. It is reported in this study that more than half of the participants have good general health, but still aging process is linked to a range of changes in systemic physiology that have an impact on physical function and performance. Research by Mendonca et. al., (2017) shows that physical performance in elderly persons has been found in various studies to be significantly reduced. Over the age of 60, the reduction in endurance capacity is extremely subtle, and it varies greatly depending on sex, task specificity, and individual training status. This explains the results which participants in this study score the lowest in endurance scales among 11 scales in PSDQ-S. Increasing age is often associated with physical inactivity. In fact, Chan et. al., (2019) in his study stated that the total prevalence of physical inactivity among older persons aged ≥60 years old was 48.8 percent. In this study however, the participants show high participation in physical activity with PASE score of 153.5±88.0. It is exceeding the preliminary norms for PASE among age group of 60-69 which is 144.3±58.6. It may be due to the means age of the participants which is 64±3 can be categorized as early stage of elderly. In addition, over 64% of participants were still working despite their older age. So, it may contribute to their participation in physical activity and make them remain active.

There are many types of physical activities that can be practiced by older people. For example, it can be leisure time physical activity, transportation such as walking or cycling, occupational, house chores, sports, or planned exercise. According to WHO (2010), older people

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are recommended to do a minimum of 150 minutes of moderate-intensity aerobic exercise per week, or a minimum of 75 minutes of vigorous-intensity aerobic exercise per week, or an equivalent combination of moderate and vigorous-intensity activity. The frequencies of the physical activities can be doubled for additional health benefits. Other than that, flexibility exercises and muscle-strengthening activities should be done for 2 days per week or more.

Results of this study indicate that there is direct relationship between the level of physical activity and physical self-description with correlation of r=0.44. Meaning that, increase in level of physical activity are directly associated with increase of physical self-description and vice versa. The exercise and self-esteem model (EXSEM) discusses the relationship between physical activity and overall self-esteem. According to the EXSEM, physical activity enhances self-efficacy (Vani et. al., 2021). This is because, physical activity has many benefits, for example, it can strengthen muscles, improves flexibility and endurance and make changes to a healthier body composition and a better physical appearance. Therefore, it can boost perceptions of physical competence, which increases general self-esteem. The other way around, older people may participate in physical activity due to their good physical self-description which increase their confident and trust on themselves to do exercise.

Next, Conde et. al., (2021) stated that emotional regulation and intrinsic motivation were positively related with physical self-concept. Discussing on relationship between physical self-description and mental health, self-determination theory declares that good self-determine motivation can improve psychological well-being (Martin et. al., 2012). This statement strongly supports the result of this study which report the inverse relationship between physical self-description and mental health issues (r=-0.42). By right, older people who has better physical self-description are seem to has lower risk of mental health issues and conversely. Hence, it should be emphasized that motivation or self -confidence is essential for a better mental health among the elderly.

Last but not least, this study also shows that level of physical activity is inversely associated with mental health problems (r=-0.24). In other words, high participation in physical activity is correlated with reduce of mental health problems such as depression, anxiety and stress among older people. It was proposed that physical activity such as gardening obviously can have an impact in managing depression.

This is because; it incorporates physical activity, social connection, and provides an opportunity for people to get in touch with nature on a regular basis and engage in green exercise (A & Thompson, 2018).

In addition, environmental factors during physical activity also to some extent affect the mental health of an individual. It is reported that outdoor physical activity can reduce anxiety and negative mood level and improve positive mood and cortisol level in older person (Rodiek, 2002). Also, people who live in convenience areas with a lot of trees and green space for daily physical activity have better mental health, less stress, lower morbidity and longevity in the elderly, better cognitive performance, and healthier cortisol profiles (Wood et al., 2015). As an effect of physical activity, it was reported that rise in core body temperature and increased release of beta endorphin following exercise can improve positive mood, enhance sense of well-being and reduce symptoms of depression (Craft et.al., 2004).

6.0 Conclusion and Recommendations
This study shows that there are significant association among the three variables with the highest correlation between the level of physical activity and physical self-descriptions (r=0.44), followed by relationship of physical self-description and mental health status (r=-0.42) and lastly association between level of physical activity and mental health status (r=-0.24). It should be noted that this result only indicates the degree of association between variables and does not distinguish between the dependent and the independent variables. Further research should be done to determine the specific scales in PSDQ-S and that are highly correlated with mental health and level of physical activity.

Acknowledgments

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