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INTERACTION OF PHYSICAL ACTIVITY, MENTAL HEALTH AND QUALITY OF LIFE: A STUDY ON UNIVERSITY STUDENTS IN PAKISTAN

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ABSTRACT

In Pakistani society an elevated level of physical inactivity and psychological distress has been identified lately. Nevertheless, most of the studies examining the association between physical activity and psychological health are limited in reference to the population in Pakistan especially in consideration to University students. University students are considered to be at a risk stage due to academic stress and physiological changes. Therefore, the purpose of this study was to explore the associations between physical activity, quality of life and psychological health related among university students in Pakistan. Data was collected from 378 participants from seven universities in Pakistan (265 females, 112 males). The age ranges from 18-48 years, (M=22.7, SD=3.97), mostly within the age range of 19-24. General Health Questionnaire-12, SF-36 quality of life and International physical activity questionnaire were administered with the help of class teachers, in their classroom. Data was analyzed by using bi-variate correlation on SPSS. Results indicated a linear positive relationship of physical activity with mental health component summary r=0.12, p<0.05 and a negative association with psychological distress r=-0.12, p<0.05. Conversely, psychological distress was negatively related to overall health related quality of life r =-0.32, p<0.01 and its subscales; mental component summary r=-0.31, p<0.01 and physical component summary r=-0.27, p<0.01. However, the variability of results was revealed in consideration to the intensity of PA. Only vigorous PA and walking significantly correlated with psychological distress, mental health component summary and overall quality of life. A further research is suggested where the interaction of mental health and PA intensity is assessed through experimental study.

***Keywords:** Physical activity, mental health, psychological distress, university students in Pakistan.*

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1. INTRODUCTION

1.1 Physical Activity and Mental Health: Physical activity (PA) is termed as movements produced by the body muscles with the expenditure of energy (World Health Organization, 2013). Research has revealed PA to be linked with the numerous physical and psychological health advantages specifically in the prevention of cardiovascular disease, certain types of cancer, obesity, hypertension (Center for Disease Control, 1996), depression and anxiety (Abu-Omar, Rutten, & Lehtinen, 2004; Hamer, Stamatakis, & Steptoe, 2009; Biddle, & Asari, 2011). The World Health Organization (2013) has defined mental health as a state of one's full mental potentials, not merely the absence of a mental disorder, rather a state in which a person exerts productively, able to stand the stressors and successfully be able to provide contributions to the society. Ayub, Irfan, Naeem, and Blackwood (2012) reported the overall prevalence of depression and anxiety in Pakistan as 29%-60% among women and 10%-33% among men. Moreover, physical activity has identified to be effective in the reduction of depression and anxiety symptoms (Strohle, 2009; Biddle, & Asari, 2011). However, the PA or exercise impact on mental health among the student population has received a significantly less attention as compared to the other population. Even within the mental health and PA domain, the variability in the intensity of PA has not been highlighted much. Few studies have examined the intensity of PA over mental health but have shown variability of results. Bouchard, Shephard, and Stephens (1994) stated that vigorous PA might have negative effects on mental health in the general population. Similarly, vigorous PA has been described inefficient in the management of anxiety among healthy population (Raglin, Wilson, & Galper, 2007). Moreover, Asztalos, Bourdeaudhuij, and Cardon (2009) indicated overall mental health did not significantly correlate with PA specifically for women. The diversity in the results in consideration to PA intensity and mental health indicates further research to uncover the relationships between different level of PA intensity and mental health related variables.

1.2 Quality of life and Mental Health: The term quality of life was defined as an inclusion of wellbeing and functioning in one's health state. The functioning was characterized by the capability to carry out the daily living, cognitions and physical ability. While the wellbeing was integrated by healthy bodily and emotional states, self-concept and global perception linked with the life satisfaction (Stewart, & King, 1991). Medical research has reinstated the term quality of life by health related quality of life (HRQL) and integrated several categories: physical functioning, emotional well-being, social functioning, and role activities, as well as health perceptions and global assessment of life satisfaction (Shumaker, Anderson, & Czajkowski, 1990). Health related quality of

life (HRQL) has been studied for adults reported chronic mental and physical condition. Findings revealed the reflection of at least one chronic physical condition in physical component summary. Likewise, the effect of as a minimum of one chronic mental illness was reflected in mental component summary (Bayliss, Rendas-Baum, White, Maruish, Bjorner, & Tunis, 2012). A similar study was conducted by Cook, and Harman (2008) that identified lesser health days, mean 6.8 was reported by the adults having mental issues in comparison to the adults without those mental health problems. In consideration to physical health, mean unhealthy days were revealed to be 1.0 to 3.6. Nevertheless, HRQL was showed significantly lesser for mental health conditions in comparison to the physical health conditions.

1.3 Physical Activity and Quality of Life: The positive contribution of PA with quality of life has been explored by previous research. Gill, Hammond, Reifsteck, Jehu, Williams, Adams, ….. , and Shang (2013) explored a connection of PA with emotional, social and physical wellbeing. A qualitative study was conducted where participants labeled their experience of having physical activity as stress relieving, mood enhancing, dignity gaining, helps them improve their cognitions, physically wellbeing, develops spirituality within and improve social relations. Another study analyzed the previous literature and revealed a better quality of life with increased levels of physical activity (Pucci, Rech, Fermino, & Reis, 2012).

However, previous studies have been conducted to explore interaction of physical activity, mental health and quality of life. Yet so far, no study has been conducted in Pakistan weighting the interaction of all these variables simultaneously. Secondly, it is imperative to investigate the association of PA with these variables in Pakistan because previous literature has pointed out a high prevalence of mental and physical illness and sedentary life style in Pakistan (Ghazala, & Khuwaja, 2003; Rab, Mamdou, & Nasir, 2008; Khuwaja, & Kadir, 2010). Therefore, the researcher considers as vital to examine these associations especially within the framework of university students in Pakistan. The population of university students according to Arnett (2000) is at an age facing various situations and changes, whereas at the same time is facing the academic stress. Furthermore, the results of the mentioned studies cannot be generalized to Pakistan due to the cultural variations. Grob, Little, Wanner, and Wearing (1996) suggested that sociocultural framework might be the mediating variable for the influential phenomena of perceived control over health. As a result, interaction of physical activity, mental health, health locus of control and quality of life in university students in Pakistan is considered as a prolific avenue to be examined.

Thus, the answer to the following questions in reference to the university students in Pakistan is seeked; 1) how the different intensities of PA related to

mental health, physical health and quality of life? and 2) How mental health, physical health and quality of life are related to each other?

2. METHODS AND MATERIALS

2.1 Research Design

Correlational research design was used because the researchers were interested in exploring the combined as well as the separate relationship of psychological distress, quality of life, mental health, physical health and physical activity.

2.2 Participants

The total number of participants were 378 university students in Pakistan (male =112, female=265), age ranges from 18-48 years, (M=22.7, SD = 3.97), mostly within the age range of 19-24, from seven universities in Pakistan: University of Punjab, Government College University Lahore, University of Management & Technology Lahore, College of Home Economics Lahore and Beacon House National University Lahore, National University of Modern Languages, and University of Azad Jammu & Kashmir.

2.3 Measures

2.3.1 General Health Questionnaire-12 (GHQ-12; Goldberg, 1970): GHQ-12 is a 12 items, self-administered scale that yields the current experience of a symptom and behavior specifically of psychological distress, on a four point (0-3) likert scale with the total score of 36. Lopez and Dresch (2008) investigated reliability, external validity and factor structure of GHQ-12 in Spanish population, internal consistency of the scale was found to be 0.76.

2.3.2 SF-36: Quality of Life Matrix (Ware, Snow, Kosinski, & Gandek, 1993): It is a health survey comprises of 36 items that are divided into eight subscales; Physical functioning, Role limitations due to physical health, Role limitations due to emotional problems, Vitality, Mental health, social functioning, Body Pain and General health. In a broader index it incorporates the summary of physical health (physical functioning, role physical, body pain and general health) and mental health (role emotional, social functioning, mental health and vitality construct). The scale does not target a specific disease rather it measures general health. The overall Cronbach's α coefficient of the SF-36 questionnaire was 0.821 while the respective Cronbach's α coefficient for each dimension was > 0.70 (Qu, Guo, Liu, Zhang, & Sun, 2009).

2.3.3 International Physical Activity Questionnaire (IPAQ): IPAQ is a short form questionnaire assessing the physical activity among the adults comprises of seven questions. There are three specific types of exercise that IPAQ assess; vigorous-intensity exercise, moderate-intensity exercise and walking. The questionnaire is structured in a way that the scores of three domains are computed separated and additionally IPAQ total is also calculated. Kurtze, Rangul and Hustved (2008) suggested IPAQ as a good measure for physical activity, as it holds strong and considerable association with VO_2max, $r = 0.41$ ($p \leq 0.01$). The three (low, moderate and high) Categorization of PA correlated significantly with VO_2max (0.31 $p \leq 0.01$).

2.4 Procedure

Participants were approached in different universities where the questionnaire was administered with the help of the class teachers, in their classroom before or after the lecture. Written consent was taken from all students prior to the questionnaire administration. Few of the questionnaires were also administered to the students doing internships at the different work place during the summer vocations. A small proportion of the questionnaires are also administered by sending them through the internet.

3. RESULTS

Table 1: Correlation matrix of GHQ, physical & mental health and IPAQ subscales

	Physical Health	Mental Health	Quality of Life	P.A Vig	P.A Mod	Walking	Overall P.A
Psycho Distress	-0.27**	-0.31**	-0.32**	-0.10*	-0.08	-0.11*	-0.12*
Physical Health		0.72**	0.91**	0.10*	-0.00	0.08	0.08
Mental Health			0.91**	0.12*	0.04	0.11*	0.12*
Quality of Life				0.10*	0.00	0.86**	0.09
P.A Vig					0.49**	0.29**	0.90**
P.A Mod						0.23**	0.75**
Walking							0.52**
Overall P.A							

**p<0.01, *p<0.05

Table 1 illustrates the bivariate correlation matrix among all used variables. As it can be seen there is a negative significant relationship between psychological distress with quality of life total score r =-0.32, p<0.01 and its subscales; mental component summary r=-0.31, p<0.01 and physical component summary r=-0.27, p<0.01. Psychological distress also has a negative correlation with all the IPAQ

scores r=-0.12, p<0.05 and significant negative relation with two of them; Vigorous physical activity r=-0.10, p<0.05 and walking r=-0.113, p<0.05. On the other hand, Physical component summary of SF-36 has a significant positive association with mental health component summary of SF-36 r=0.72, p<0.01 overall quality of life score r=0.91, p<0.01and vigorous physical activity r=0.10, p<0.05. However, mental component summary of SF-36 has a positive relationship with overall quality of life r=0.91, p<0.01, vigorous physical activity r=0.12, p<0.05 and overall physical activity r=0.12, p<0.05. Overall quality of life significantly correlated with vigorous physical activity r=0.10, p<0.05 and walking r=0.86, p<0.01. All the IPAQ subscales significantly positively correlated with each other.

4. DISCUSSION

The aim of the study was to investigate the relationship of PA with mental health and quality of life among university students in Pakistan. It was imperative to investigate the association of PA with these variables because it has been confirmed previously that academic environment accompanies with various stressors (Khan, & Humtsoe, 2016). These stressors have negative impact on student's mental and physical health (Ongori, & Agolla, 2009). Additionally, previous literature has also highlighted a very high prevalence of depression and anxiety in reference to the student population in Pakistan (Khan, Mehmood, Badshah, Ali, & Jamal, 2006; Rab, Mamdou, & Nasir, 2008). However, evidence of PA benefits in preventing physical and mental health issues has also been published (Asztalos, Bourdeaudhuij, & Cardon, 2000; Hassme, Koivula, & Uutela, 2000; Khawajah, Qureshi, & Azam, 2004; Hamer, Stamatakis, & Steptoe, 2009; Biddle, Mavis, & Asare, 2011). Nevertheless, it has also been reported that in Pakistan only one fourth of adults engaged in regular PA (Ghazala, & Khuwaja, 2003). Khuwaja, and Kadir (2010) also confirmed that majority of adults are physically inactive in Pakistan.

The same pattern was observed in the present study; where overall PA had a significant positive relation with mental component summary and negative with psychological distress. A significant relationship was also observed among the all subscales (vigorous, moderate, walking and overall PA) of IPAQ. However, no association between overall PA and physical component summary and overall quality of life has been detected. It can be asserted that the general trend for sedentary life style in Pakistani society might be a reason for that, as the results indicate a large percentage (37%) of respondents as inactive. It is also revealed by Samir, Mahmud, and Khuwaja (2011) that sedentary life style is increasingly being promoted with the tremendous urbanization and modernization in Pakistan. Therefore, it can be concluded that there might be many respondents scoring high

on overall quality of life and physical component summary yet simultaneously are extremely physically inactive. Secondly, the mean age of respondents was twenty-two years. Therefore, it can be assumed that due to their young age they might not be suffering from any serious physical health issues. It has been observed that usually the onset of many of the serious medical conditions is above forty years. Klein, and Nathan (2003) reported that under the age of forty only 3% of individual suffer from Coronary artery disease. Similarly, the onset of type 2 diabetes was found to be increased with age. The occurrence of type-2 diabetes reveals to be doubled among the age group 30-39 as compared to the age group 18-29 (Nguyen, Xu, Chen, Srinivasan, & Berenson, 2012). Though, a longitudinal study is required to explore the impact of health risk behaviors on health among the university students in Pakistan. So the effects of these behaviors can be assessed in future.

In consideration to the intensity of PA, vigorous PA displayed a significant positive association with mental health, physical health and quality of life; although a significant negative relation was revealed with the psychological distress. Similarly, walking had a significant negative interaction with psychological distress and a significant positive relation with mental health and overall quality of life. Nevertheless, walking did not correlate with physical health. Though, there is an interesting finding that moderate PA did not significantly correlated with any of them. The previous research has also indicated the variability of results in regards to the intensity of PA and mental health. Hamer, Stamatakis, and Steptoe (2009) illustrated that at least twenty minutes per week of activity was found to be beneficial for mental health. The greater level of PA especially sports has also been illustrated as helpful in the risk reduction. On the other hand, Bouchard, Shephard, and Stephens (1994) stated that over training in exercise might have negative effects on mental health in the general population. Where over exertion could stimulate depression. Similarly, Kim, Park, Allegrante, Marks, Ok, Cho, and Garber (2012) illustrated a curvilinear interaction of physical activity duration and mental health. It was suggested that the optimal duration of physical activity for gaining best the mental health result was 2-7 hours per week, more or less than this range was revealed to be causing adverse effects on mental health. Simultaneously, it is also reported that all type of intensities of PA had a positive linear relationship with emotional wellbeing and had a negative linear correlation with mental health (Asztalos, Bourdeaudhuij, & Cardon, 2009). However, in order to explore the exact effects PA intensity over mental health, a further research is suggested where the interaction of mental health and PA intensity is assessed through experimental study.

5. CONCLUSIONS

A linear positive relationship of physical activity with mental component summary and a negative association with psychological distress was observed. Conversely, psychological distress was negatively related to overall health related quality of life. However, the variability of results was revealed in consideration to the intensity of PA. Only vigorous PA and walking significantly correlated with psychological distress, mental health component summary and overall quality of life.

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