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## Physical activity among adults with psychiatric illness in Karachi, Pakistan: A survey based research

Aneeta JEVTANI

*Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan*

Erum PERVEEN

*Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan*

Mustafa UROOSA

*Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan*

Nazia ZEYA

*Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan*

Farkhanda EMAD

*Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan*

*See next page for additional authors*

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# Physical activity among adults with psychiatric illness in Karachi, Pakistan: A survey based research

## Abstract

**Introduction:** In Pakistan, psychological wellbeing is still considered a stigma and has limited resources to provide maximum care. Individuals with mental illness struggle with maintaining their sedentary behaviors and have poor wellbeing. The aim of the study is to investigate the physical activity among individuals with a psychiatric illness. **Materials and Methods:** A sample data of 144 outpatients, diagnosed with a psychiatric illness were collected from the Outpatient Department (OPD) of a public sector psychiatric set-up in Karachi, Pakistan. The participants were assessed with the International Physical Activity Questionnaire (IPAQ). **Results:** Females with a psychiatric illness were found to be more physically active as compared to males with a psychiatric illness ( $p < .01$ ). Females were reported to have significant results ( $p < .01$ ) in the domain of housework, while males reported having significant high scores ( $p < .05$ ) in the domain of transportation-related physical activity. The moderate intensity of physical activity was found significant among females ( $p < .01$ ) with a psychiatric illness, while walking intensity of physical activity was found significant among males with a psychiatric illness ( $p < .05$ ). **Conclusion:** Gender was found to be a predicting factor for physical activity. There was an additional finding that married individuals were physically more active than single individuals ( $p < .05$ ). Further studies are recommended to investigate barriers related to variables to facilitate healthy living.

## Keywords

sedentary lifestyle, exercise, primary care, mental disorders, gender

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## Cover Page Footnote

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## Authors

Aneeta JEVTANI, Erum PERVEEN, Mustafa UROOSA, Nazia ZEYA, Farkhanda EMAD, Fareeha KANWAL, Mahum AZHAAR, and Faisal YAMIN

## Article

## Physical activity among adults with psychiatric illness in Karachi, Pakistan: A survey based research

Aneeta JEVTANI<sup>1</sup>, Erum PERVEEN<sup>2</sup>, Mustafa UROOSA<sup>3</sup>, Nazia ZEYA<sup>4</sup>, Farkhanda EMAD<sup>5</sup>, Fareeha KANWAL<sup>6</sup>, Mahum AZHAAR<sup>7\*</sup>, Faisal YAMIN<sup>8</sup>

<sup>1</sup> Dow University of Health Sciences, Karachi, Pakistan

<sup>2</sup> Dow University of Health Sciences, Karachi, Pakistan

<sup>3</sup> Dow University of Health Sciences, Karachi, Pakistan;  
ORCID 0000-0002-1427-872X

<sup>4</sup> Dow University of Health Sciences, Karachi, Pakistan;  
ORCID 0000-0001-7415-3286

<sup>5</sup> Dow University of Health Sciences, Karachi, Pakistan;  
ORCID 0000-0002-1194-1645

<sup>6</sup> Institute of Professional Psychology, Bahria University, Karachi, Pakistan;  
ORCID 0000-0002-6639-6007

<sup>7</sup> Institute of Professional Psychology, Bahria University, Karachi, Pakistan;  
ORCID 0000-0002-3986-8611

<sup>8</sup> Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan;  
ORCID 0000-0003-4716-2392

\* Correspondence: Mahum Azhaar, Lecturer & Advisor Student Affairs, Institute of Professional Psychology, Bahria University – Karachi Campus, 13th, National Stadium Road, Karachi, Pakistan;  
e-mail: mahamazhar.ipp@bahria.edu.pk; mahum.azhaar@hotmail.com

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**Abstract:** Introduction: In Pakistan, psychological wellbeing is still considered a stigma and has limited resources to provide maximum care. Individuals with mental illness struggle with maintaining their sedentary behaviors and have poor wellbeing. The aim of the study is to investigate the physical activity among individuals with a psychiatric illness. Materials and Methods: A sample data of 144 outpatients, diagnosed with a psychiatric illness were collected from the Outpatient Department (OPD) of a public sector psychiatric set-up in Karachi, Pakistan. The participants were assessed with the International Physical Activity Questionnaire (IPAQ). Results: Females with a psychiatric illness were found to be more physically active as compared to males with a psychiatric illness ( $p < .01$ ). Females were reported to have significant results ( $p < .01$ ) in the domain of housework, while males reported having significant high scores ( $p < .05$ ) in the domain of transportation-related physical activity. The moderate intensity of physical activity was found significant among females ( $p < .01$ ) with a psychiatric illness, while walking intensity of physical activity was found significant among males with a psychiatric illness ( $p < .05$ ). Conclusion: Gender was found to be a predicting factor for physical activity. There was an additional finding that married individuals were physically more active than single individuals ( $p < .05$ ). Further studies are recommended to investigate barriers related to variables to facilitate healthy living.

**Keywords:** sedentary lifestyle, exercise, primary care, mental disorders, gender.

### 1. Introduction

World Health Organization (2002) has warned about the increased implications of physical inactivity for an individual's health. According to WHO (2008), around 31% of the world population is physically inactive, and this has been reported to be forth leading risk of mortality that has affected about 3.2 million people around the globe. Sedentary

lifestyle changes have increased mental health and medical problems, leading to complications and increased mortality rates around the globe [1]. Poor mental health accounts for a considerable percentage of the disease burden at the global level [2].

Everybody has a unique and different mechanism which works in its own ways. It is generally based on the genetic makeup and other factors, such as age, gender, developmental stages, ethnic background, occupation, education, climate, and the place of residence. Human body depends on its capability to balance with environmental changes which can often be challenging. A biopsychosocial model plays a vital role in this regard, as it helps in explaining a deep connection of mental health with physical activity. John et al. [3] highlighted the biopsychosocial model which may facilitate and develop the understanding of the intricated phenomenon of physical activity.

It is essential to understand the terms used these days in the context of physical health. Physical activity, exercise and physical fitness are the terms that are frequently confused with each other and mostly used interchangeably. Caspersen et al. [4] explained physical activity as any body movement which is generated by skeletal muscles and has energy consumption. There are different ways to carry out physical activity, such as walking, cycling, sports, household work or any other activities. Exercise is a subgroup of physical activity which is planned, structured and repetitive, having a final objective of enhancement and upkeep of fitness. Physical fitness is a set of characteristics that are either health or skill related [4].

Sedentary behaviors have a negative impact on the human body including a risk of cardiovascular diseases, cancer, metabolic disorders, depression, and cognitive impairment [5]. In Singapore, a high predominance of insufficient physical activity (43.2%) and excessive sedentary behavior (38.8%) was found among individuals with a psychiatric illness [6]. Some studies have observed the association between physical activity and mental disorders, such as depression and anxiety [7, 8] and a reduced risk of these psychiatric disorders and co-morbidities in presence of high physical activity [9]. Furthermore, it has been observed that sedentary behaviors have an association with an increased risk of depression [10]. Regular physical activity was found to reduce depressive symptoms [11]. There is an increase in literature supporting that there is a neural system connection between physical health and psychological health that regulates physiology and cognitive functioning [12]. Physical activity plays a vital role in promoting brain health and functioning of neurotransmitters [13, 14, 15]. Physical activity enhances brain power to learn and memorize [16, 17]. Dumith et al. [18] concluded that around the globe, 1 out of 5 adults do not engage in physical activity. Especially UK-based female South-Asians (Bangladeshi and Pakistani) fail to meet the minimum criteria for physical activity as recommended due to differences in the understanding of physical activity (PA) and sedentary time [19]. Saudi female adolescents were also found to be significantly ( $p < 0.05$ ) more sedentary, less physically active, especially with respect to vigorous physical activity, and had an irregular breakfast routine more than Saudi male adolescents [20].

Improvement has been noticed in aerobic capacity, muscular strength and stamina coordination, body flexibility and composition with an increase in activity. Engagement in physical activity eventually helps in overall improvement in human health [21, 22], chronic illnesses [23] and health related quality of life [24].

Developing countries like Pakistan already suffer from the increasing rate of psychological and physical problems and the demand-supply gap. Mental health related services are also insufficient for the long-term facilitation along with being compromised due to lack of awareness and insensitive attitudes of people towards those seeking the treatment of psychiatric illness [25, 26].

Around 27% of the Pakistan population has been found to be prone to develop a psychiatric illness. Depression and sleep related problems have been found to be predominant mental health problems in Pakistan [27]. Factors such as female sex, marital status, age, and education level have been shown to be significant contributors to mental illness

[28, 29, 30]. However, there is limited evidence-based literature in Pakistan to understand the role of physical activity in psychiatric illnesses here.

Psychiatric illnesses have been neglected in developing countries, like Pakistan, as there is no national-level policy for individuals with psychiatric illnesses. It is crucial to make the population aware of the importance of mental health in the same way as physical health, and it must be incorporated as a core service in primary care [31].

A review by Ahmad et al. [32] indicated an association between physical inactivity and variables such as age, sex, socioeconomic status, lack of social support specifically from friends and family. Most importantly, lack of awareness and an environment lacking resources and facilities were found to be the key components leading to physical inactivity [32].

Sedentary lifestyle causes a lot of barriers to health. In Pakistan, insufficient physical activity was found to have a significant association with obesity [33], depression among elderly populations [34], and behavioral risk factors for developing non-communicable diseases [35].

Due to limited evidence of association of psychiatric illnesses with physical activity, this study aims to bring about an understanding of how physical activity is associated with psychiatric illness and to help in developing psychological interventions along these lines. The study also aims to determine the gender difference in the physical activity of individuals with a psychiatric illness. The study hypothesized that there would be a significant difference in physical activity between males and females with a psychiatric illness.

## 2. Materials and Methods

### 2.1. Participants and Methods

A survey based quantitative research was conducted on 144 individuals (79 males and 65 females), aged 18 years to 69 years old who were recruited through purposive sampling from an outpatient psychiatric facility in Karachi, Pakistan. Those with a diagnosis of a psychiatric illness confirmed a clinician (psychiatrist) were included in the study. Patients who had aggression issues, who were non-responsive or were below the age of 18 or over the age of 69 were excluded from the study.

Participants reported to come from a variety of backgrounds, including education (no education 43.1%, primary level 13.2%, matriculation 12.5%, intermediate 18.8%, graduation 10.4%, masters 2.1%), occupation (employed 18.1%, unemployed 36.8%, housewife 33.3% and household 11.8%), marital status (single 38.1% and married 61.8%), along with duration of illness, mode of treatment, and 11 psychiatric illnesses [unspecified anxiety disorder (F41.9), adjustment disorder with depressed mood (F43.21), bipolar II disorder (F31.81), major depressive disorder (F33.1), Possible major neurocognitive disorder due to frontotemporal lobar degeneration (G31.9), attention-deficit/hyperactivity disorder predominantly hyperactive/impulsive presentation (F90.1), obsessive compulsive disorder (F42), other (or unknown) substance use disorder (F19.10), unspecified personality disorder (F60.9), schizophrenia (F20.9), post-traumatic stress disorder (F43.10)] were recorded during the survey.

To assess the individual's physical activity, the International Physical Activity Questionnaire (IPAQ) English Long Form was used. IPAQ-Long Form measures physical activity based on four domains, including 1) leisure time physical activity, 2) household and gardening activities, 3) work-related physical activity and 4) transport-related physical activity. IPAQ is a 27-item self-reported measure for physical activity, having acceptable reliability [36].

Each participant was interviewed for around 15 to 20 minutes to minimize the incidence of misinterpretation of study.

An institutional approval was received to conduct the study. According to APA code of ethics, all the participating members were provided with a consent form which explained the purpose of the study, and confidentiality of personal information was assured. The right to withdraw was ensured throughout the study procedure.

## 2.2. Statistical Analysis

Statistical Package for Social Analysis Software (SPSS) ver.22 was used for parametric tests. Descriptive and inferential statistics including independent sample t test, correlation, and regression were found using SPSS.

## 3. Results

Table 1 presents the statistical description of mean and standard deviation of age, along with gender, education, occupation, disorders, and the duration of illness.

**Table 1.** Demographic descriptive statistics of the participants.

Variables	N	M	SD	%
Age	144	34.26	11.66	
Gender				
Male	79			54.9
Female	65			45.1
Education				
No education	62			43
Primary Level	19			13.2
Matriculation	18			12.5
Intermediate	27			18.8
Graduation	15			10.4
Occupation				
Employed	26			18.1
Unemployed	53			36.8
Housewife	48			33.3
Household	17			11.8
Disorders				
Unspecified anxiety disorder (F41.9)	9			6.3
Adjustment disorder with depressed mood (F43.21)	2			1.4
Bipolar II disorder (F31.81)	20			13.8
Major depressive disorder (F33.1)	46			31.9
Possible major neurocognitive disorder due to frontotemporal lobar degeneration (G31.9)	1			.7
Attention-deficit/hyperactivity disorder predominantly hyperactive/impulsive presentation (F90.1)	1			.7
Obsessive compulsive disorder (F42)	9			6.3
Other (or unknown) substance use disorder (F19.10)	13			9.0
Unspecified personality disorder (F60.9)	1			.7
Schizophrenia (F20.9)	41			28.5
Posttraumatic stress disorder (F43.10)	1			.7

Variables	N	M	SD	%
Duration of diagnosis				
1 to 5 years	90			62.5
6 to 10 years	31			21.5
11 to 15 years	17			11.8
16 to 20 years	5			3.5
21 to 25 years	1			.7
26 to 30 years	00			00

*N* = number of individuals, *M* = mean, *SD* = Standard Deviation

Table 2 presents differences in physical activity between genders and the marital status, which was found to be significant ( $p < .05$ ). It indicates that females with a psychiatric illness were more physically active than males with a psychiatric illness. Moreover, the table shows that married individual were significantly ( $p < .05$ ) more physically active than single individuals.

**Table 2.** Correlations between physical activity and gender and marital status.

Physical Activity	n	M	SD	<i>t</i>	<i>P</i>	95% CI	
						LL	UL
Gender							
Male	79	322.300	597.687	-4.091	.000*	-951.731	-331.600
Female	65	963.970	1229.296				
Marital Status							
Single	55	381.980	669.840	-2.229	.027*	-702.121	-42.027
Married	89	754.060	1119.690				

*df* = 142, \* $p < .05$ , *M* = mean, *SD* = Standard Deviation, *LL* = Lower Limit, *UL* = Upper Limit

Table 3 indicates that the domains of transportation and housework show a significant difference between genders ( $p < .05$ ). It indicated that males with a psychiatric illness had higher physical activity in the domain of transportation, while females with a psychiatric illness had higher physical activity in the domain of housework.

**Table 3.** Gender differences in domains of physical activity.

Physical Activity	Male ( <i>n</i> = 79)		Female ( <i>n</i> = 65)		<i>t</i>	<i>p</i>	95% CI	
	M	SD	M	SD			LL	UL
Job	58.740	224.31	6.092	49.117	1.85	.066	-3.457	108.754
Transportation	171.189	347.31	61.430	119.358	2.43	.016*	20.513	199.004
Housework	68.350	392.828	881.310	1233.442	.57	.000*	-1103.523	-522.384
Leisure-time	24.020	93.368	15.140	92.455	-5.53	.569		

*df* = 142, \* $p < .05$ , *M* = mean, *SD* = Standard Deviation, *LL* = Lower Limit, *UL* = Upper Limit

Table 4 illustrates a statistically significant ( $p < .05$ ) difference in walking and moderate intensity of physical activity metabolic equivalent (MET) between genders. It indicates that walking MET was higher among males with a psychiatric illness, while moderate MET was higher among females with a psychiatric illness.

**Table 4.** Gender differences in intensity of physical activity metabolic equivalent (MET).

Intensity MET	Male (n = 79)		Female (n = 65)		<i>t</i>	<i>p</i>	95% CI	
	M	SD	M	SD			LL	UL
Walking MET	223.06	456.305	71.580	140.289	2.577	.011*	35.266	267.692
Moderate MET	99.240	407.411	881.310	1233.442	-5.297	.000*	-1073.843	-490.291
Vigorous MET	.000	.000	11.08	89.305	-1.103	.272	-30.924	8.770

MET: Metabolic Equivalent,  $df = 142$ , ( $*p < .05$ ) M = mean, SD = Standard Deviation, LL = Lower Limit, UL = Upper Limit

Table 5 illustrates a positive correlation of physical activity (PA) with gender, with  $r = .33$  ( $p < .01$ ), and with the marital status, with  $r = .18$  ( $p < .05$ ). However, the degree of correlation is small for marital status as compared to gender which reflects a medium degree of correlation.

**Table 5.** Correlation between physical activity, marital status and gender.

	Gender	Marital Status	Physical Activity
Gender	-	.20*	.33**
Marital Status	-	-	.18*
Physical Activity	-	-	-

\*( $p < .05$ ), \*\*( $p < .01$ )

Table 6 represents linear regression to predict the role of gender in physical activity. It indicates that gender ( $p < .01$ ) is a statistically significant predictor of physical activity.

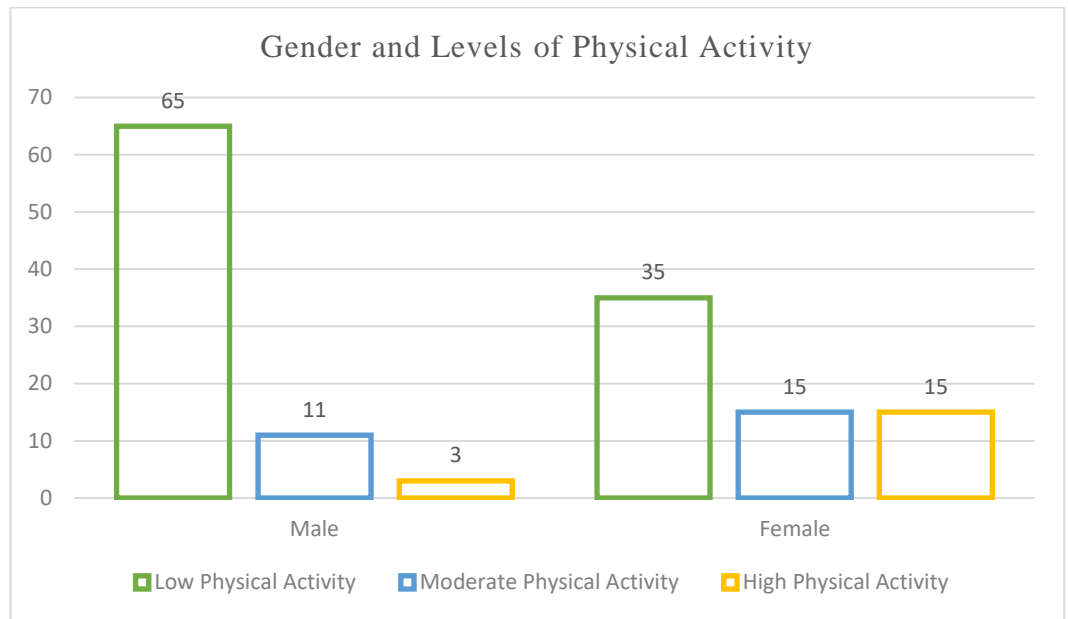
**Table 6.** Simple linear regression for the impact of gender on physical activity (N = 144).

Predictors	Physical Activity		
	<i>B</i>	<i>R</i> <sup>2</sup>	<i>P</i>
Gender	641.66	.105	.00**

\*( $p < .05$ ), \*\*( $p < .01$ )

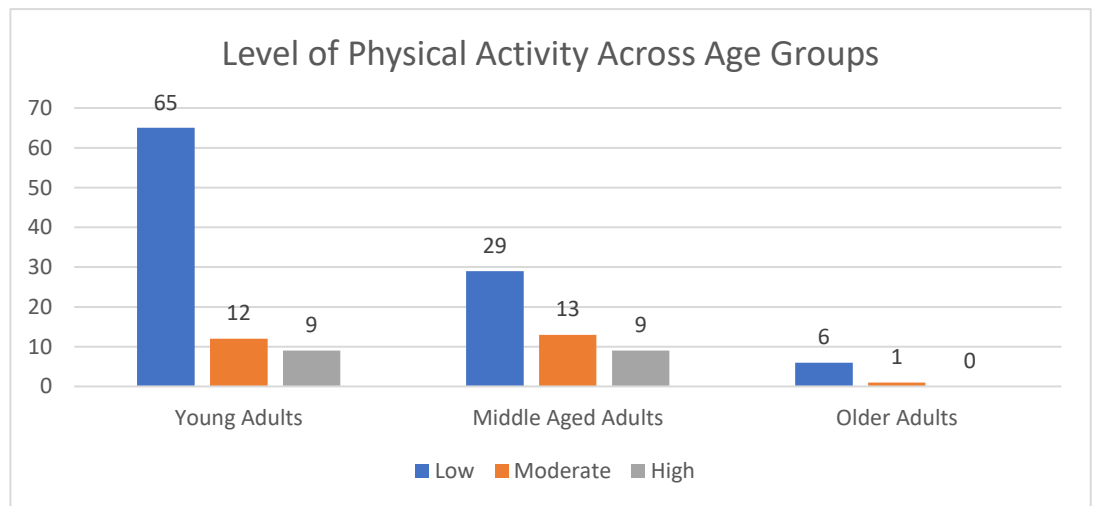
Figure 1 represents levels of physical activity (low, moderate, and high) among males and females with a psychiatric illness showing a statistically significant difference ( $p < .05$ ), with the  $\chi^2$  statistic of 16.40. This illustrates that males were significantly involved in low levels of physical activity as compared to females. Moreover, females were found to be more involved at a moderate and high physical activity level as compared to males.





**Fig. 1.** Graphical representation of gender and levels of physical activity.  $df = 2, \chi^2=16.40, p < .05$

Figure 2 shows that a low level of physical activity was found among 65 young adults aged 18 to 35 years, 29 middle-aged adults aged 36 to 55 years and 6 individuals from the older adult group aged 55 years older. Moreover, 12 individuals from among young adults, 13 from the middle-aged ones, 1 from older adults manifested a moderate level of physical activity. The least people were reported for vigorous level physical activity.



**Fig. 2.** Level of physical activity across age groups.

Finally, Figure 3 represents the distribution of levels of physical activity across the recorded psychiatric illnesses.

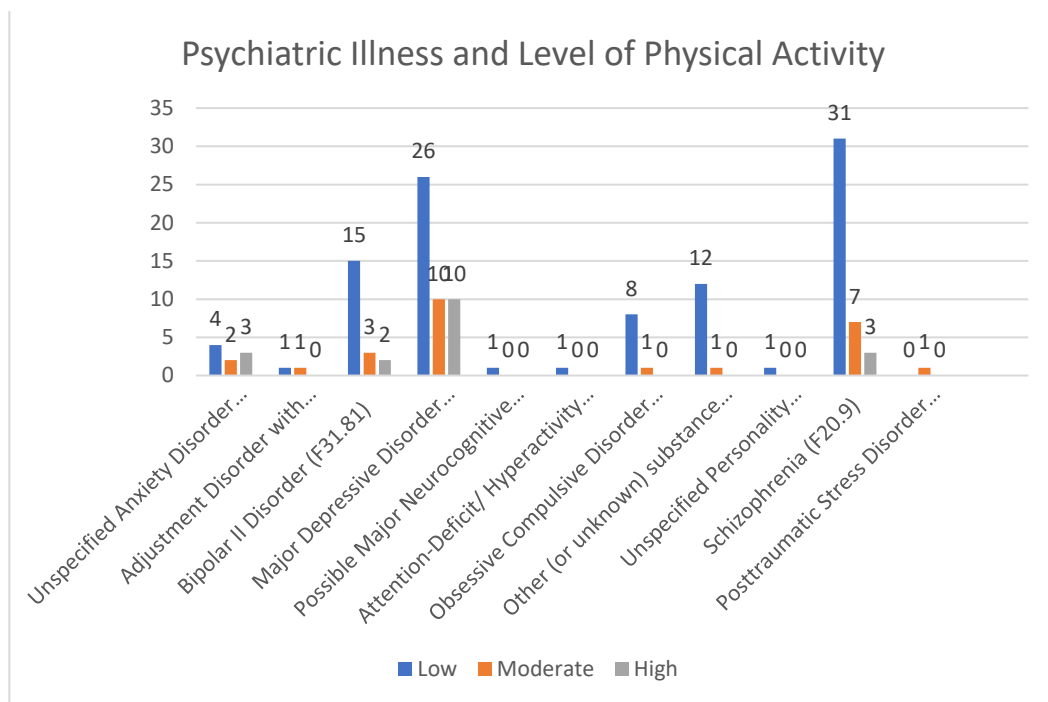


Fig. 3. Psychiatric illness and the level of physical activity.

#### 4. Discussion

The study aimed to investigate the physical activity of individuals with psychiatric illness. The findings of the study can be beneficial in planning the interventions and inclusion of physical activity in the patients’ routine. The main emphasis of the study was to raise awareness of physical activity among the individuals with a psychiatric illness.

In this cross-sectional study, the findings manifested a significant difference ( $p < .01$ ) in the physical activity of individuals with a psychiatric illness. It was found that females ( $M = 963.97, SD = 1229.29$ ) were physically more active than males ( $M = 322.30, SD = 597.68$ ) reflecting that males were found to be physically inactive. Moreover, statistically a significant difference ( $p < .05$ ) was found among married ( $M = 754.06, SD = 1119.69$ ) and single ( $M = 381.98, SD = 669.84$ ) individuals. Similar findings were found in a study which discovered various factors associated with low physical activity, such as male sex, marital status as single, being unemployed, illiteracy, increased BMI, years of illness, use of medication, fitness regimen, and being diagnosed with schizophrenia [37].

Another study displayed that individuals with severe psychiatric illness were found to be engaged in low level of physical activity as compared to the general population. Especially females with a psychiatric illness were found to be more physically inactive than males with psychiatric illness [38]. In 1993, gender differences were found to have a relationship with physical health and mental health [39] reflecting a need to understand the link between emotional wellbeing and physical activity.

The domain and intensity of physical activity plays a crucial role in an individual’s wellbeing; it will help in exploring it in more depth so that further interventions can be planned accordingly. Physical activity of females with a psychiatric illness ( $M = 881.31, SD = 1233.44$ ) in the domain of housework was found to be statistically significant ( $p < .01$ ) indicating that they are more active, while males with a psychiatric illness ( $M = 24.02, SD = 93.36$ ) were found to be physically inactive. Physical activity of males with a psychiatric illness ( $M = 171.18, SD = 347.31$ ) was found to be statistically significant ( $p < .05$ ) in the domain of transportation-related physical activity as compared to females with a psychi-

atric illness ( $M = 61.43$ ,  $SD = 119.35$ ). However, the difference in job and leisure-time related physical activity was insignificant between genders of individuals with a psychiatric illness.

Levels of physical activity have shown a significant difference between males and females ( $p < .05$ ) with the chi2 value of 16.40. The result showed that males were engaged in low levels of physical activity as compared to females, as they were engaged in a moderate level of physical activity (as shown in Figure 1).

Pakistan is among those Asian countries that have strong practices of their cultural beliefs and values which are transferred from generation to generation. The role of women in Pakistan signifies their position primarily in the family as they have a major responsibility of managing household chores, maintaining and taking care of the family [40]. After getting married, females get involved in more responsibilities to facilitate their loved ones, which explains their reasons for not doing exercise because they do not have the time and opportunity [41]; in this vein, the current finding also indicates that females were found to be physically active in the housework domain as compared to males.

The intensity of physical activity was also explored. It was found that walking MET physical activity was significantly ( $p < .05$ ) high among males ( $M = 23.06$ ,  $SD = 456.30$ ) as compared to females ( $M = 71.58$ ,  $SD = 140.28$ ). Moreover, moderate intensity MET physical activity was found to be significantly high ( $p < .01$ ) among females ( $M = 881.31$ ,  $SD = 1233.44$ ) as compared to males ( $M = 99.24$ ,  $SD = 407.41$ ). The current study findings communicate that housework was a major physical activity contributor among females with a psychiatric illness with moderate MET intensity, while males indulged in transportation-related walking physical activity.

Around 36.8% of the total sample population with a psychiatric illness reported to be unemployed; the majority of the females were homebound and had limited opportunities keeping their mental health status in mind. It cannot be expected for a person with a mental illness to maintain a high-level of housework. There needs to be some activity other than household responsibility. Moreover, psychiatric illnesses such as depression and schizophrenia were found to correlate with a low level of physical activity as compared to other psychiatric illnesses (Figure 3). Meta-analysis and a systematic review helped identify that physical activity interventions can be effective in reducing depressive symptoms and symptoms of schizophrenia along with enhancing the quality of life [42].

The current findings of gender differences were found to be contrary, as according to a study, females were found to be more physically inactive [43]. In Asian culture, it has been observed that females are expected to have household responsibilities and are required to take care of the needs of the family while males are expected to fulfil the financial responsibilities. Thus, it can be a reason behind the increased physical activity of the female participants. A study finding supports that married females experience more mental distress, while married males represent poor mental health related to family characteristics [44]. As regards gender, an inconsistent pattern has been observed, thus there is need to promote a gender-specific approach to planning physical activities [45].

Demographics, such as gender and the marital status, can be further explored by recruiting an equal number of individuals with psychiatric disorders. As the number of the current study participants was limited, the findings cannot be generalized. It is important to recognize further essentials and barriers which accompany a low level of physical activity among individuals in Pakistan. It was found that individuals with chronic psychological and physical illnesses reported low levels of physical activity [46].

Barriers to physical activity for individuals with a psychiatric illness were found at three levels: physical, psychological, and socioeconomic one [47], as a notable change in any one factor [48] can cause difficulty for a person with a mental illness and/or medical

illness to follow the regimen. Furthermore, mental illness symptoms, their emotional stability, compliance to activity program, treatment medication and its related side effects, such as weight gain and feeling lethargic, are significant barriers among psychiatric outpatients of rehabilitation [49].

American guidelines (2018) emphasize including at least 150 minutes to 300 minutes of moderate level physical activity, or greater intensity workout for at least 75 minutes to 150 minutes in a week [50]. A perspective shared suggests that if household-related physical activity is excluded from the result analysis females will not meet the criteria of physical activity to even minimum requirement [51]. Thus, it is suggested to improvise gender specific activities.

The main limitation of this study is a small sample size. It is recommended to conduct extensive level studies to gather new information and explore barriers to physical inactivity in Pakistan. In Pakistan, there is limited evidence of such programs offered to psychiatric patients. However, internationally, quite a few studies have found that an onset of mental disorders can be delayed and prevented by exercise and physical activity either used exclusively or aided with other treatment like psychotherapy or pharmacotherapy [52]. An analysis yielded disorder specific benefits which can be induced by exercise or physical activity [53].

The study findings verify this notion that in order to benefit people by physical activities, it is important to emphasis awareness of physical activity and to arrange patient-tailored programs for individuals with a psychiatric illness to promote a healthy lifestyle. The role of physical rehabilitation is expected to help in this regard. The gender difference can be explored in future with different cohort groups to understand and initiate guidelines for the benefit of human health.

## 5. Conclusions

The current study findings demonstrate that there is a positive relationship of gender and marital status with physical activity among individuals with a psychiatric illness. However, the relationship between marital status and physical activity was found to be weak, while a moderate relationship was found between gender and physical activity.

Females with a psychiatric illness were found to be physically more active than males with a psychiatric illness. Married individuals were physically more active as compared to single individuals. Furthermore, females with a psychiatric illness were found to be active in the domain of housework, house maintenance and taking care of family as compared to males with a psychiatric illness. However, males with a psychiatric illness were found to be physically more active in the domain of transportation-related physical activity as compared to females with a psychiatric illness.

Moreover, significant differences were found in the intensity MET of physical activity between genders which illustrated that females with psychiatric illnesses were more active at moderate MET intensity of physical activity, while males with psychiatric illnesses were more engaged in walking MET intensity of physical activity.

Thus, it can be concluded that females with a psychiatric illness were more physically active as compared to males with a psychiatric illness. The findings determine that gender is a predictor of physical activity and show a positively moderate relationship. Future research needs to work on improvising a regimen routine to include leisure level physical activity and encourage physical activity among individuals with a psychiatric illness.

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