




## Original Article

# Assessment of Burnout Syndrome and Physical Activity of the University Teachers - A cross-sectional Observational Study

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## Abstract

**Background:** Burnout and physical activity (PA) are two critical determinants of health. The burnout and PA of the university teachers in Pakistan are not well established. The main objective of the present study is to determine the prevalence of burnout syndrome and the level of physical activity in university teachers.

**Methodology:** The sample of university teachers (n=505) was drawn from 14 public/private universities in Peshawar using a partly convenient, non-probabilistic method based on an exhaustive and up-to-date database of all universities in Peshawar. Data were collected on these parameters: socio-demographics, anthropometrics (body weight, height, and body mass index: BMI), Burnout using Maslach Burnout Inventory (MBI-ES), and PA level. The global Physical Activity Questionnaire developed by WHO (GPAQ-WHO) was used.

**Results:** The sample consisted predominantly of males (78%) with a mean (SD) age of  $37.5 \pm 7.9$  (Range: 28 - 60). The results demonstrated that 19% of university teachers suffered from burnout syndrome, with most of those with job experience <10 years. The mean PA for all the respondents was 955.1 MET minutes/week, with significant differences in PA levels of male and female teachers from public vs. private universities (p, for all trends < 0.05). The proportion of physically active university teachers was 63.6% (95%CI 56.6 to 68.2), with a higher proportion of university teachers without Burnout Syndrome being physically active than those with Burnout Syndrome (73.5% (95%CI 68.1 to 79.3) vs. 21.6% (95%CI 16.5 to 24.6). Only a small number of university teachers could achieve the recommended levels of PA with differences between genders and university types.

**Conclusion:** Work-related burnout is seen in teachers with poor physical activity, and females are mostly affected. Public sector universities showed a greater burnout rate. The public sector needs to revitalize the staff and train them to manage their workload efficiently.

## Keywords

Burnout Syndrome, Physical Activity, University Teachers, Work Stress, Occupation.

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## Introduction

Stress and burnout are common phenomena present among university teachers. Burnout is a typical form of chronic occupational stress characterized by three dimensions, i.e., emotional exhaustion, depersonalization (or cynicism), and reduced professional efficacy<sup>1,2</sup>. The term 'Burnout,' which can be translated as 'emotionally exhausted'<sup>3</sup>, has been studied mainly in the health professions. There has been an increasing trend of investigating the burnout phenomena in other occupations, including teaching at the university level.

Regular physical activity (PA) is a state of health<sup>4</sup>. In addition to its overall positive impact, it is now accepted that health also plays an essential role in maintaining regular exercise. World Health Organization (WHO) recommends 600 or more metabolic equivalent tasks (METs) minutes/week as at least sufficient to produce health benefits<sup>5</sup>. The forms of movement they suggest are walking, swimming, indoor cycling, low-intensity aerobics, running or jogging (only if this was done before pregnancy), maintaining a healthy body weight, and improving mental health<sup>6</sup>.

It hypothesizes that regular physical activity and exercise may constitute a practical approach to reducing burnout in university teachers. Physical activity to minimize burnout syndrome and its associated symptoms include its ease of accessibility, lower costs, and positive "side effects," such as the reduced risk for cardiovascular diseases (CVD)<sup>7-9</sup>. As teachers in the university may face work stress and burnout that may affect their PA, it is logical to think about the association between burnout and low PA. Low PA may further deteriorate the state of burnout or vice versa. Therefore, the analysis of PA habits of university teachers

in association with burnout is of great importance. The main aim of our study was to investigate the prevalence of burnout and level of PA in university teachers and the frequency, duration, and intensity of PA concerning stress and burnout.

## Methodology

### Study Design and Subjects' Characteristics:

This cross-sectional study considered university teachers working at different universities of Khyber Pakhtunkhwa (KP) of Pakistan, both in the public and private sectors. The sampling strategy used for the present study was partly convenience, non-probabilistic, and based on consecutive cases that met these inclusion criteria: (1) to be a formal institutional employee (university teacher/permanent basis), (2) of any age, (3) only morning shift, (4) from any area/subject of service, (5) serving the university at the time of the study (data collection) and not on leave, (6) with no chronic infectious/non-infectious diseases. Rotating personnel, visiting, teachers on probation, pregnant/lactating, diabetic teachers, etc., were omitted. The sample size was calculated using Cochran's equation<sup>10</sup>. Where,  $n$  = Sample size;  $z$  = z-score correspond to the 95% confidence level, i.e. 1.96;  $e$  = Acceptable margin of error assumed as 4% or 0.04;  $p$  = population proportion (assumed to be 50% or 0.5);  $N$  = Total teaching population = 2818; Putting the above values in the equation (1), the sample size was estimated 494. In this way, the required sample was 500. However, the sample size was increased to 510 to take care of non-response/dropped out. The university teachers were screened initially to ensure selection criteria.

### Data Collection

Socio-demographics and Anthropometrics: Socio-demographic data were collected in a



pre-designed questionnaire. All methods of measurement were standardized, and the same persons collected data. Anthropometrics were measured for the weight (digital scale: Tanita Terraillon, 100g precision) and height (stadiometer; SECA 231, 0.1cm precision). Body mass index (BMI) was calculated (weight in kg divided by the height in meters squared). Using WHO criteria (2020), BMI was categorized as average weight (BMI: 18.5 to 24.9), overweight (BMI: 25.0-28.0), and obese (BMI>28.0).

**Burnout Assessment:** Maslach Burnout Inventory (MBI)- Educators Survey is a well-known 22-item questionnaire. This includes evaluation of three sub-scores: (1) "Emotional exhaustion" (EE; including 9 items with a maximum score of 54 points with items 1,3,6,8,13,14,16,20); (2) "Depersonalization" (DP), including 5 items with a maximum score of 30 points (these are items 5,10,11,15,22) and (3) "Personal accomplishment" (PA), including 8 items with a maximum score of 48 points (items 4,7,9,12,17-19,21) (Maslach et al., 1996). In this manner, the total score for the whole scale could have a maximum value of 132. The 'EE' subscale assesses aspects of physical and/or mental exhaustion and includes characteristics like physical wear/tear, exhaustion, and loss of strength/energy. The 'DP' subscale showed negative aspects of the responses and attitudes of other individuals and main co-workers in a setting. The 'PA' subscale displays typical negative responses aimed at the respondent and the work itself. These responses are related to low morale, depression, low productivity, poor self-esteem and inability to withstand pressure, etc., for the present study. The MBI score was dichotomized according to the criteria reported by Ramirez et al. (1996) as 'present' or 'absent' when considering high scores in the dimensions of 'EE' and 'DP' and low scores. In 'PAC' Burnout was defined as:

high score (>26) for 'EE' and 'DP' (> 9), low (< 34) score PAC<sup>11</sup>. In this way, burnout was defined in four levels:

1. No burnout, when all three dimensions are 'negative.'
2. Mild burnout, when only one of the three dimensions is 'positive.'
3. Moderate burnout, when two out of three dimensions are 'positive.'
4. Severe burnout, when all three dimensions are 'positive'<sup>12-14</sup>.

A Cronbach's Alpha Coefficient was applied for MBI reliability analysis.

**Assessment of Physical Activity:** Physical activity levels of the teachers was evaluated by using the 'global physical activity questionnaire (GPAQ).' The data collected through GPAQ was used to calculate the 'Metabolic equivalent of Task (METs)' score<sup>15</sup>. "MET is the ratio of 'working metabolic rate' relative to the 'resting metabolic rate. Briefly, GPAQ has 16 questions. These are grouped to assess PA in 3 distinct domains:

1. Work,
2. Transport, and
3. Discretionary activity (recreation/leisure).

The last domain has questions that assess the frequency/duration of two different categories of PA defined by the energy requirement/intensity (vigorous/moderate-intensity PA). In the transport domain, the frequency/duration of all walking/cycling is taken. In addition, one question enquires explicitly about time spent in sedentary activities/week. The data extracted from GPAQ defines PA as 'high PA, moderate PA, and low PA. The GPAQ questionnaire was pre-tested. A pilot study was carried out on the university teachers (n=10) to check the validity, practicability, and interpretation of the responses.

For statistical analysis SPSS version 20.0 was used for data analysis. Values were reported



in mean (SD). Means were compared using a student's t-test, and a value of  $p < 0.05$  was considered significant.

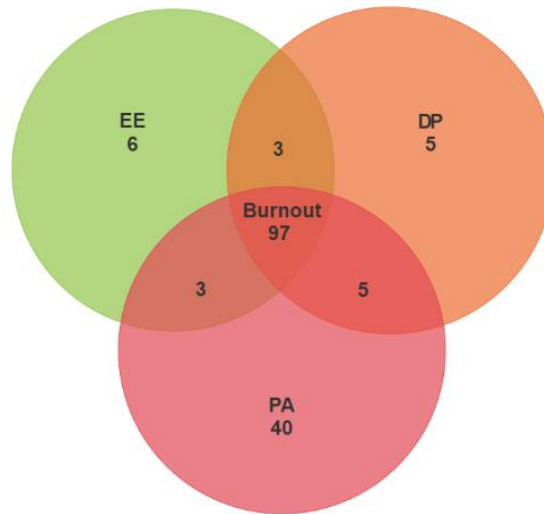
## Result

Five hundred-five (505) university teachers from different universities in the Khyber Pakhtunkhwa (KPK) province of Pakistan completed the study. Some of the baseline socio-demographic characteristics are provided in Table 1. In general, the University teachers in the present study represent relatively young faculty, mainly

with ages  $< 35$  years. A significant percentage of university teachers were male (67.9%). The mean family size was fairly large ( $7.5 \pm 7.0$ ). Lesser than two-thirds (30%) of the University teachers demonstrated their satisfaction with their monthly income. Most (75%) of the teachers from the study sample belonged to public sector universities (71%). The majority of the university teachers who participated in this study were from sciences, followed by a decent percentage from the Arts subjects.

**Table 1: Summary of demographics variables (N = 467).**

Personal and Socioeconomic Characteristics	No./mean	%
<b>Age</b>		
<30 years	167	33.1
31 - 40	156	30.9
41-50	115	22.8
>50	53	10.5
<b>Gender</b>		
Male	343	67.9
Female	162	31.9
<b>Family Type</b>		
Joint	333	65.9
Nuclear	171	33.9
<b>Income Status</b>		
Sufficient	143	28.3
Partially Sufficient	311	61.6
Insufficient	51	10.1
<b>Health status (any type of chronic disease)</b>		
Diabetes (yes)	173	34.3
Cardiovascular vascular (yes)	123	24.4
Any chronic infectious disease (yes)	45	8.9
<b>Health Status</b>		
Any physical disability (yes)	23	4.6
Any other long-term health issue (yes)	10	2.0
Health status (any type of chronic disease)	147	29.1
<b>Accommodation status</b>		
Rental House	187	37.0
Own House	107	21.2
University House	122	24.2



**Figure 1. Distribution of three dimensions of Burnout**

This Venn diagram is based on the number of University Teachers having a high level of these dimensions. This diagram has not considered the number with low and moderate levels on these dimensions. The numbers for each region represent the number of University Teachers in different situations; 97=had all three dimensions common in them; 11=had two dimensions, comprising 3 for 'EE' and 'DP,' 5 for 'DP' and 'PA,' and 3 for 'EE' and 'PA.' The number of University Teachers who had only high 'EE,' only 'DP,' and only 'Pac' were 6, 5, and 40.

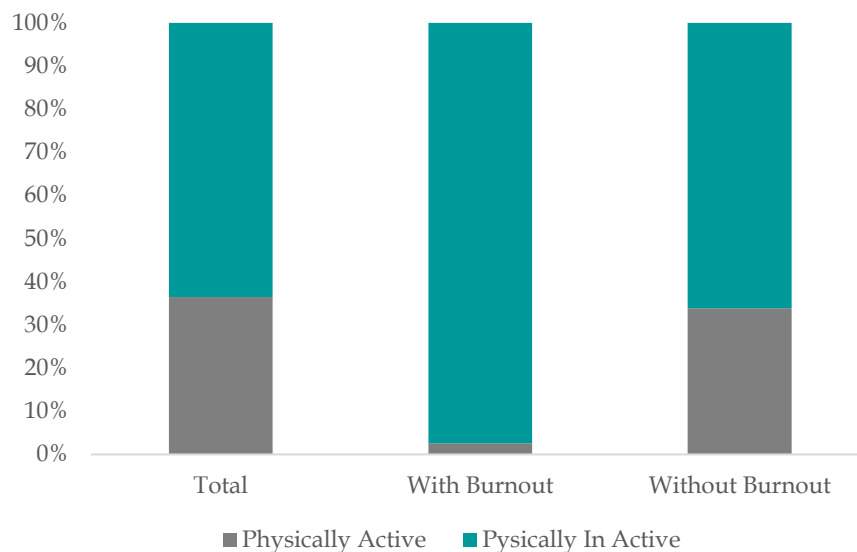
We defined burnout based on high scores on 'EE' (>26) and 'DP' (>9) and a low score on PAC (<34). So in this way, positive (higher than the cutoff score of any of the dimensions) number of respondents in three dimensions, we divided job burnout into four levels: no burnout (all the three dimensions are negative); mild burnout (only one of the three dimensions is positive); moderate burnout (arbitrary two of the three dimensions are positive); and severe burnout (all the three dimensions are positive). These results are shown in Figure 1.

Table 2 represents PA among the study participants. Information on PA was calculated in three domains, i.e., PA while at work, PA while traveling, and PA during recreational activities. Total mean PA at work, travel, and recreation was 176.8, 277.6, and 500.8 MET minutes/week, respectively. Significant differences were noted in the mean physical activity of males and females ( $p < 0.05$ ). Differences between PA of males and females were also pointed out in the three domains of physical activity ( $p$ , for all trends  $< 0.05$ ).

**Table 2: PA among University Teachers.**

Physical Activity		Total (n=505)		With Burnout (n=97)		Without Burnout (n=408)	
		Mean	SD	Mean	SD	Mean	SD
<b>Work Domain</b>	<i>Vigorous</i>	8.9	21.1	5.4	19.1	12.4	7.9
	<i>Moderate</i>	167.9	26.8	134.7	24.8	201	23.6
<b>Total activity at work*</b>		176.8	23.5	140.1	21.5	213.4	20.3
<b>Total Activity during Travel*</b>		277.6	45.3	142.1	43.3	413	42.1
<b>At Recreation</b>	<i>Vigorous</i>	116.6	43.2	34.5	41.2	198.7	40
	<i>Moderate</i>	384.2	54.3	156.7	52.3	611.7	51.1
<b>Total recreational activity*</b>		500.8	44.8	191.2	46.5	810.4	45.3
<b>Mean Total PA*</b>		955.1	113.6	473.4	111.3	1436.8	107.7

\*P&lt;0.05

**Figure 2: Proportion of Active and Inactive University Teachers**

According to burnout syndrome, figure 2 showed the proportion of physically active and inactive university teachers. The proportion of physically active university teachers in this study was 36.4% (95%CI 26.6- 44.2), with a higher proportion of university teachers without Burnout Syndrome being physically active than university teachers with Burnout Syndrome, 33.9% (95%CI 18.1-39.3) vs. 2.6% (95%CI 1.5-4.6).

Table 3 showed the percentages of university teachers who achieved the recommended level of physical activity as recommended by WHO. When the study subjects' PA level was disaggregated by the "WHO global recommendation on PA for health," males who achieved the recommended level (23.7%) were almost 52.6% lower than those who didn't achieve (76.3%). In



comparison, the case of a female who reached the recommended PA level (12.7%) was 74.6% lower than those who didn't achieve t (87.3%).

Similarly, only 11.2% of university teachers from public universities achieved the recommended PA level. A relatively higher percentage of university teachers from private universities (25.2%) achieved the recommended PA. In addition, there were comparatively more males than females who completed the recommended level of physical activity recommended by WHO (22.7% vs. 12.7;  $p < 0.05$ ). Similarly, significantly more teachers from private universities than those from public universities achieved the recommended level of physical activity as recommended by WHO (25.1% vs. 12.2;  $p < 0.05$ ).

**Table 3: Distribution of University Teachers who achieved/did not achieve the 'WHO recommendations on PA for health\*.**

	Male n(%)	Female n(%)	p-value
<b>Distribution by Gender</b>			
Achieved the recommended level	81(23.7)	21(12.7)	0.014
Didn't achieve the recommended level	262(76.3)	141(87.3)	0.005
<b>Distribution by university type</b>			
	Public n(%)	Private n(%)	
Achieved the recommended level	40(11.2)	38(25.1)	0.0001
Didn't achieve the recommended level	313(88.8)	114(74.8)	0.0001

\*Calculations were based on WHO guidelines that adults, 18-64 years, should accumulate at least 600. MET-minutes of physical activity per week (2); WHO, World Health Organization;  $p < 0.05$

### Association between Burnout Syndrome and socio-demographic characteristics

A Chi-square test of independence was performed to examine the relation between Burnout Syndrome and socio-demographic characteristics. Table 4 shows an association between Burnout Syndrome and some socio-demographic characteristics. The relation between these variables were mostly significant,  $\chi^2 (1, N = 505) = 8.93-31.37$ ). Burnout was present when the global score was  $\geq 56$  (median) and represented the primary outcome of bivariate and multivariate analysis. All other variables except 'gender' was significantly associated with burnout ( $p$ , for all trends  $< 0.05$ ). The analysis for other than socio-demographic variables shows that except for the subscales, 'stress symptoms,' 'good working conditions,' 'social support at work,' and 'promotion and development opportunities' were significantly associated with Burnout Syndrome ( $p$ , for all trends  $< 0.05$ ). A total of 19% subjects were reportedly suffering from burnout syndrome.



**Table 4: Frequency,  $\chi^2$  test results, p-value, prevalence ratio, and confidence interval for the association between primary outcome and socio-demographic, occupational, psychosocial, and health-related variables.**

Items	Categories	Respondents with Burnout Syndrome. (%)	X2	p-value
<b>Age (yrs)</b>	<45	76	9.21	0.0023
	>45	21		
<b>Sex</b>	<i>Male</i>	72	1.204	0.272
	<i>Female</i>	25		
<b>Family Type</b>	<i>Joint</i>	47	9.27	0.0023
	<i>Nuclear</i>	50		
<b>University Type</b>	<i>Public</i>	61	8.931	0.0027
	<i>Private</i>	36		
<b>Field Discipline</b>	<i>Sciences</i>	84	32.21	<0.0001
	<i>Humanities/Arts</i>	15		
<b>Higher Qualification</b>	<i>MS/MPhil</i>	70	31.37	<0.0001
	<i>PhD</i>	27		
<b>Position/Job Title</b>	<i>Lecturer</i>	48		0.0021
	<i>Assistant Professor</i>	22		
	<i>Associate Professor</i>	17		
	<i>Professor</i>	10		
<b>Job Experience (years)</b>	<10 yrs	61	7.142	0.0079
	>10 years	36		
<b>Marital Status</b>	<i>Married</i>	15	7.211	0.0064
	<i>Unmarried</i>	31		
<b>Stress Symptoms</b>	<i>Yes</i>	72	5.29	0.21
	<i>No</i>	25		
<b>Good Working Conditions</b>	<i>Yes</i>	8	0.018	0.89
	<i>No</i>	89		
<b>Social Support at Work'</b>	<i>Yes</i>	6	2.93	0.087
	<i>No</i>	91		
<b>Promotion and development opportunities</b>	<i>Yes</i>	11	0.204	0.651
	<i>No</i>	86		
<b>Workplace bullying</b>	<i>Yes</i>	82	3.82	0.050
	<i>No</i>	15		
<b>Job Satisfaction</b>	<i>Yes</i>	5	9.19	0.0024
	<i>No</i>	92		
<b>Mental Health</b>	<i>Yes</i>	18	25.79	<0.0000
	<i>No</i>	79		





## Discussion

The present study shows that 19% of university teachers were affected by burnout syndrome. This is a high percentage considering that a relatively strict criterion for defining burnout was adopted in the present study. Burnout was determined based on high scores on 'EE' (>26) and 'DP' (>9) and a low score on 'PAC' (<34). So in this way, based on the positive (i.e., higher than the cutoff score of any of the three dimensions) number of respondents in the three dimensions, burnout was divided into four levels<sup>12-14</sup>. According to this criterion, 19% (n=97) of university teachers had severe burnout syndrome, while the rest (n=408) were categorized as 'no burnout at all' (24%); mild burnout (41%), and 'moderate burnout' (16%). This study also demonstrated that the university teachers had low physical activity: mean (SD) 955.1 (113.6) MET-minutes/week. Furthermore, the physical activity of university teachers with burnout syndrome (Mean 473.4 SD 111.3 vs. Mean 1436.8; SD 107.7 MET-minutes/week) was significantly lower than the mean physical activity of university teachers without burnout syndrome ( $p,0.05$ ). In addition, more females compared to males and more university teachers in public universities compared to those in private universities had physical activity levels much lower than the recommendations of WHO.

A teacher at a university is usually regarded as a 'low-stress job'. In addition, job security, conducive working employment, and a high social standard are generally associated with teaching at the university level. Teaching at the university level is considered a job with great promotion opportunities and enhanced satisfying level<sup>16</sup>. However, over the past 20 years, perceptions about academic careers and the environment have

changed drastically. For example, Akerlind and McAlpine reported the pressures for change acting upon academia<sup>17</sup>. This pressure includes substantial growth in student numbers/ institutions of higher learning, increased emphasis on research, concerns for equity and social benefits of education, and great emphasis on the job-training job training. As presented in the present work, university teachers with lower physical activity are more likely to suffer from burnout syndrome. These findings are in agreement with other studies<sup>7,8</sup>. In another study by Abos et al. demonstrated that two sessions of exercise in a week improved satisfaction at work and work-related outcomes<sup>7</sup>. Another study by Sane et al., who collected data from 81 university teachers from Iran, demonstrated a significant inverse correlation between PA and burnout syndrome<sup>18</sup>. In addition, a linear but inverse correlation between PA and its components with burnout represents the positive role of PA in the prevention or reduction of burnout. Although the relationship between PA and burnout investigated in the present study may be casual with no indication of whether low PA causes burnout or vice versa, the association between the two is essential to form from a nutrition and health point of view. Future studies should investigate the cause-effect relationship between the two.

Nevertheless, a high level of burnout is associated with substantial losses to employees' health and well-being and, consequently also, economic losses. Employees with burnout show significantly reduced self-efficacy about: blank - B5, poor sleep quality, reduced cognitive functioning, compromised workability, and are at relatively higher risk for developing CVD diseases. Employers, too, face the consequences such as leave and/or absence



and productivity time loss<sup>19</sup>. Given the high prevalence of burnout and its negative consequences, it is valuable to examine potential approaches and remedies to reduce it<sup>20</sup>.

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## Conclusion

In conclusion, university teachers who were physically more active were relatively less prone to burnout. PA thus may play an important role in enhancing the physical and mental health status of university teachers. Future studies must explore this (rewrite). Findings also showed a significant difference between the genders and types of universities concerning burnout prevalence and physical activity levels. These differences may be considered while designing rehabilitation programs for university teachers.

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