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**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 important determinants of health. The level of burnout and PA of university teachers in Pakistan is not well established. The main objective of the present study was to determine prevalence of burnout and PA in university teachers. **Methods:** This partly convenience and non-probabilistic study was conducted in 2016-2021 in Peshawar, Pakistan. Sample of university teachers (n=505; M/F=343/162) was drawn from the population of teachers from 14 public/private universities in Peshawar using a simple random method. Data were collected on these parameters: socio-demographics, anthropometrics including weight, height and body mass index (BMI), Burnout using Maslach Burnout Inventory (MBI-ES) and PA level. Global PA Questionnaire developed by WHO (GPAQ-WHO) was used for PA assessment. **Results:** The results demonstrated that 19% of university teachers suffered from burnout syndrome with majority of those of younger age (<30 yrs) 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 and 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 Burnout Syndrome (73.5% (95%CI 68.1 to 79.3) vs. 21.6% (95% CI 16.5 to 24.6). Only 36.4% (95% CI 26.6- 44.2) of university teachers had recommended levels of PA with differences. In the general sociodemographic variables, all other variables except 'gender' were significantly associated with burnout (p, for all trends <0.05).

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Conclusion: In conclusion, university teachers suffer from work-related burnout syndrome. University teachers with low PA, of female gender and from public universities were the most affected.

Keywords: burnout syndrome, physical activity, university teachers

INTRODUCTION

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

Regular physical activity (PA) is a state of health and wellbeing.⁴ 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 per week for health benefits.⁵ The forms of movement they suggest, such as walking, swimming, indoor cycling, low-intensity aerobics, and running or jogging (only in if this was done before pregnancy) in maintenance of a healthy body weight and improvement of mental health.⁶

Regular PA may constitute an effective strategy in reducing burnout in the university teachers.^{7,8} Physical activity is an appropriate option for its ease of accessibility, lower costs, no adverse effects on health rather positive effects, particularly on cardiac health.⁹ As teachers in the university may face work-related burnout as a result of enormous workload that may affect their PA, it is logical to think about the association of burnout and low PA. In return, 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.

University education involves the highest prevalence of burnout,¹⁰ estimated to be in the range of 20 %- 40 %.¹⁰⁻¹² In this regard, numerous investigations have already inquired the basic causes of this burnout and found that high work demands, mental overload, low rewards and promotion opportunities are the main causative factors.¹⁻⁹ In addition, there are numerous contributing factors that further worsen the burnout situation in the university teachers. Therefore, there is a need to identify the contributing factors that promote burnout syndrome in the university teachers. Only then, a rehabilitation and corrective policy to minimize burnout in the university teachers can be designed. The main aim of this study was to investigate the prevalence of burnout and PA level of university teachers.

MATERIALS AND METHODS

Study Design and Settings

This was a cross-sectional observational study conducted during 2017-2020 in Peshawar, Khyber Pakhtunkhwa (KPK) of Pakistan. Teachers in the universities of Peshawar were the population of the study.

Study Sample and Sampling

The study considered university teachers, who were working at different universities of Khyber Pakhtunkhwa (KP) of Pakistan in public/private sectors. The sampling strategy used for the present study was partly convenience/non-probabilistic. Consecutive cases meeting these inclusion criteria were included: (1) university teacher on 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 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 not included. Sample size was calculated using the Cochran's equation.¹⁰

$$n = \frac{z^2 \cdot p(1-p) / e^2}{1 + (z^2 \cdot p(1-p) / e^2 N)} \quad (1)$$

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. The sample size was, however, increased to 510 to take care of non-response/dropped out. The required sample was selected randomly. For this purpose, list of university teachers were obtained from university administrations. The required sample was selected from these lists using random number sampling technique. The university teachers were screened initially to ensure selection criteria.

Data Collection

Socio-demographic data was collected in a pre-tested and validated questionnaire. All methods of measurement were standardized. The same persons collected data. Anthropometrics were measured for weight (digital scale made by Tanita Terraillon, Japan) and height (Stadiometer, SECA 231). Body mass index (BMI) was calculated from weight (in kg) divided by height (meters squared). Using WHO criteria (2020);¹³ BMI was categorized as 'normal weight'; 'overweight'; and 'obese' using BMI cut-off values of 18.5-24.9, 25.0-28.0 and >28.0, respectively.

Maslach Burnout Inventory (MBI)–Educators Survey) is a well-known tool for burnout assessment. It contains 22-items.³ This is divided into three sub-domains: (1) "Emotional exhaustion" (EE; 9 items maximum score =54); (2) "Depersonalization" (DP 5 items; maximum score of 30 points) and (3) "Personal accomplishment" (PA 8; maximum score of 48).³ In this manner, total score for whole scale could have a maximum value of 132. MBI score was dichotomized as reported by Ramirez et al., (1996).¹⁴ Burnout was defined as: (1) 'no burnout': when all three dimensions are 'negative'; (2)

‘mild burnout’’: only one of the three dimensions is ‘positive’; (3) ‘moderate burnout’’: two of three dimensions are ‘positive’; and (4) ‘severe burnout’’: all three dimensions are ‘positive’.¹³

A Cronbach’s Alpha Coefficient was applied for MBI reliability analysis. Physical activity levels of the teachers was evaluated. WHO recommended ‘global physical activity questionnaire (GPAQ)’ was used for this purpose. The data collected through GPAQ was used to calculate the ‘Metabolic equivalent of Task (METs)’ score.¹⁴ The data extracted from GPAQ was used to define PA as ‘high PA, moderate PA and low PA. The GPAQ questionnaire was pre-tested. A random sample of university teachers (10) was used. This was done to ensure validity, practicability and interpretation of responses.

Ethical Approval and Consent:

Ethical Approval was obtained from Agriculture University Peshawar (No. 841 dated 04-04-2021). Written consents were obtained from participants before the start of the study.

Statistical Analysis:

Data was fed into Excel spreadsheets. IBM SPSS Statistics version 22 was used for data analysis. Values were reported in mean (SD). Means of two independent groups were compared using students t-test. A value of $p < 0.05$ was considered significant.

RESULTS

Five hundred-five (505) university teachers from different universities in 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 a young faculty with majority with age <35 years. Majority of university teachers participating in this study were male (67.9%). The mean family size was relatively large (7.5 ± 7.0). The total mean (SD) monthly income was Rs. 150,500 (SD, 78025) ranging from 123572 to 3,33,350. Lesser than two-third (30%) of the University teachers demonstrated their satisfaction from their monthly income. Most (75%) of the teachers from the study sample belonged to public sector universities (71%). Teachers showed mean (SD) of 8.5 years job experience at the university level. Majority of the university teachers who participated in this study were from sciences followed by a descent percentage from the Arts subjects.

Table 1: Socio-demographic Characteristics of the sample (n=505)

Personal and Socioeconomic Characteristics	No./mean	%
Age		
<30 years	167	33.1
31 - 40	156	30.9
-41-50	115	22.8
>50	53	10.5

Gender		
Male	343	67.9
Female	162	31.9
Family Type		
Joint	333	65.9
Nuclear	171	33.9
Self-Perceived Income Status*		
Sufficient	143	28.3
Partially Sufficient	311	61.6
Insufficient	51	10.1
Health status (any type of chronic disease)		
Diabetes (yes)	173	34.3
Cardiovascular vascular (yes)	123	24.4
Any chronic infectious disease (yes)	45	8.9
Health Status		
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
Accommodation status		
Rental House	187	37.0
Own House	107	21.2
University House	122	24.2
Hostel	89	17.6
Current income status		
sufficient for all expenditures	189	37.4
partially sufficient for all expenditures	122	24.2
insufficient for all expenditures	194	38.4
Marital Status		
Married	249	49.3
Un-married	236	46.7
Others	20	4.0

*A question in the questionnaire asked, “What do you think whether your income is “sufficient”, “partially sufficient”, and “insufficient”?”



Figure 1. Distribution of three dimensions of Burnout: This Venn diagram is based on the number of University Teachers having high level of these dimensions. The number with low and moderate levels on these dimensions have not been considered for this diagram. The numbers for each region represent the number of University Teachers in different situations; 97 (19.2%)=had all three dimensions common in them meaning these had ‘severe’ burnout; 11(2.1%)=had 2 dimensions, comprising 3 for ‘EE’ and ‘DP’, 5 for ‘DP’ and ‘PA’, and 3 for ‘EE’ and ‘PA’, meaning 11 (2.2%) had ‘moderate’ burnout. The number of University Teachers who had only high ‘EE’, only ‘DP’, and only ‘PAc’ were, respectively, 6, 5, and 40. In this way, (6+5+40=51(10.1%) had ‘mild’ burnout.

We defined Burnout on the basis of 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 burnout into four levels. Using this criteria, the results showed high prevalence of overall burnout (31.5%): with 19.2%, 2.1% and 10.1% had, respectively, ‘severe’, ‘moderate’ and ‘mild’ burnout prevalence. These results are shown in Figure 1.

Table 2 shows PA among the study participants. Information on PA was calculated in three domains, i.e. PA while at work, PA while travelling and PA as recreational activities. Physical activity was calculated for different domains (e.g. work, travel, and recreation activities). Total mean PA at work, travel and recreation were 176.8, 277.6 and 500.8 MET minutes/week, respectively. Significant differences were noted for mean physical activity of male and female ($p < 0.05$). Differences between PA of male and female were also noted 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
Work Domain	Vigorous	8.9	21.1	5.4	19.1	12.4	7.9

	Moderate	167.9	26.8	134.7	24.8	201	23.6
Total Activity at work*		176.8	23.5	140.1	21.5	213.4	20.3
Total Activity during Travel*		277.6	45.3	142.1	43.3	413	42.1
At Recreation	Vigorous	116.6	43.2	34.5	41.2	198.7	40
	Moderate	384.2	54.3	156.7	52.3	611.7	51.1
Total recreational Activity*		500.8	44.8	191.2	46.5	810.4	45.3
Mean Total PA*		955.1	113.6	473.4	111.3	1436.8	107.7

*P<0.05

Percentage of university teachers who achieved the recommended PA level

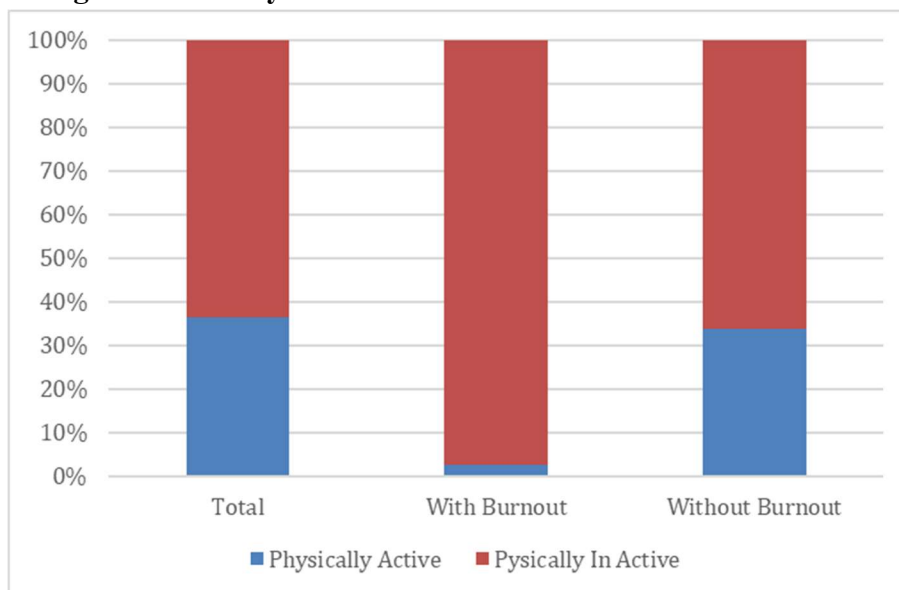


Figure 2: Proportion of Active and Inactive University Teachers

Figure 2 shows the proportion of physically active and inactive university teachers according to burnout syndrome. 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).

A Students' t test was used for compare the PA level of male and female university teachers. Table 3 shows 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 were able in achieving 'recommended level' (23.7%) were almost 52.6% lower than those who didn't achieve (76.3%). In comparison, in case of female who achieved the recommended PA level (12.7%) were 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. While, relatively a higher percentage of the university teachers from private universities (25.2%) achieved the recommended PA. In addition, there were significantly more male as compared to female

who achieved the recommended level of Physical activity as recommended by WHO (22.7% vs. 12.7; $p < 0.05$). similarly, significantly more teachers from private university compared to 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 did not achieve/achieve the ‘WHO PA recommendations’*

	Male n(%)	Female n(%)	p-value
<i>Distribution by Gender</i>			
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
<i>Distribution by university type</i>			
	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 made using WHO guidelines; WHO, World Health Organization; $p < 0.05$

Association between Burnout Syndrome and socio-demographic characteristics

A Chi-square test of independence was used to examine the relation between Burnout Syndrome and socio-demographic characteristics. Table 4 shows association between the burnout, and some socio-demographic characteristics. The relation between these variables were mostly significant, $\chi^2 (1, N = 505) = 8.93-31.37$). In the general sociodemographic variables, all other variables except ‘gender’ were significantly associated with burnout (p , for all trends < 0.05). The analysis for other than sociodemographic variables showed that except the subscales, ‘stress symptoms’, ‘good working conditions’; ‘promotion and development opportunities’ and ‘social support at work’ were significantly associated with burnout (p , for all trends < 0.05).

Table 4: Frequency, χ^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. N (%)	χ^2	p-value
Age (yrs)	<45	76	9.21	0.0023
	>45	21		
Sex	Male	72	1.204	0.272
	Female	25		
Family Type	Joint	47	9.27	0.0023

	Nuclear	50		
University Type	Public	61	8.931	0.0027
	Private	36		
Field Discipline	Sciences	84	32.21	<0.0001
	Humanities/Arts	15		
Higher Qualification	MS/MPhil	70	31.37	<0.0001
	PhD	27		
Position/Job Title	Lecturer	48		0.0021
	Assistant Professor	22		
	Associate Professor	17		
	Professor	10		
Job Experience (years)	<10 yrs	61	7.142 7	0.0079
	>10 years	36		
Marital Status	Married	15	7.211	0.0064
	Unmarried	31		
Stress Symptoms	Yes	72	5.29	0.21
	No	25		
Good Working Conditions	Yes	8	0.018	0.89
	No	89		
Social Support at Work'	Yes	6	2.93	0.087
	No	91		
Promotion and development opportunities	Yes	11	0.204	0.651
	No	91		
Workplace bullying	Yes	82	3.82	0.050
	No	15		
Job Satisfaction	Yes	5	9.19	0.0024
	No	92		
Mental Health	Yes	18	25.79	<0.0000 1
	No	79		

Percentages are calculated in rows. Results may not add due to missing values. Chi-squared test was used to calculate p-values. *Differences were significant at $p < 0.05$

DISCUSSION

The present study showed that as a whole, 31.5% of university teachers were affected from burnout syndrome. Out of these, 19.2% were severely affected, while 10.9% had 'moderate' or 'mild' burnout. This is a high percentage keeping in view that a relatively strict criteria of defining burnout was adopted in the present study. Burnout was defined on the basis of 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 three dimensions") number of respondents in three dimensions, burnout was divided into 4 levels. Our results are in close agreement to the previous studies, most of which have shown a prevalence rate of burnout upto 37% in university teachers.¹¹ Some other studies have shown variable prevalence rate of burnout, for example, 20% by Lackritz (2004),¹¹ and 40% by Amir (2020).¹²

The present study also demonstrated that the university teachers, as a whole, had low PA: mean (SD) 955.1 (113.6) MET-minutes/week. Furthermore, the PA 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 PA of university teachers without burnout syndrome ($p, 0.05$). In addition, more female as compared to male and more university teachers in public universities as compared to those in private universities had physical activity levels much lower than the recommendations of WHO.

Job as a teacher in university is usually regarded a 'low stress job'. In addition, usually job security, conducive working employment, and high social standard is associated with teaching at university level. Teaching at university level is considered a job with great promotion opportunities and of enhanced satisfying level with higher level of autonomy are attributed to teaching profession.¹⁶ Over the past 20 years or so, however, perceptions about academic careers and environment have changed radically. For example, Akerlind and McAlpine, reported the pressures for change acting upon academia.¹⁷ This pressure includes higher increase in students enrollment and also increase in institutions of higher learning. In addition, increase emphasis on research and concerns for equity are putting extra pressure on teachers. Moreover, social benefits of education and more emphasis on job-training are also sources of teachers' stress. 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.^{7,8} The study by Abos et al., demonstrated that two sessions of exercise in a week improved satisfaction at work and work-related outcomes.⁷

In another study by Sane et al., who collected data from 81 university teachers from Iran, demonstrated inverse correlation between burnout and PA.¹⁸ In addition, a linear but inverse correlation between PA and its components with burnout, representing 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 whether low PA causes burnout or vice versa, the association between the two is important from nutrition and health point of views. Future study should investigate the cause-effect relationship between the two. Nevertheless, high level of burnout may cause greater

losses in terms of “employees' health and well-being” and consequently also “economic losses”. Reduced self-efficacy, poor sleep quality, reduced cognitive functioning, compromised work ability, and are at relatively higher risk for developing diseases, particularly those of heart. Other negative consequences, for example, leave and/or absence from duty that results in slow institutional growth are related to burnout.¹⁹ Given the high prevalence of burnout and its negative consequences, it is valuable to examine potential approaches and remedies to reduce it.²⁰⁻²⁵

CONCLUSION

In conclusion, university teachers with more PA were less prone to burnout. PA thus may play an important role in enhancing the physical and mental health status of university teachers. The future studies must explore the association between PA and burnout in more details. Our study findings also showed that there was significant difference between among male/female and teachers from private vs. public universities. These differences may be considered while designing rehabilitation programs for university teachers.

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Conflict of interest

The authors have declared that no competing interests exists

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