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Comparison of Pain, Stress and Physical Activity Levels of Academic Staff According to Ergonomic Arrangement in Their Offices

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Abstract. The aim of this study is to investigate the comparison of pain, stress and physical activity levels of academic staff working at the university according to the ergonomic conditions in their working environments. For this study, the International Physical Activity Questionnaire - Short form (IPAQ), Scandinavian Musculoskeletal Questionnaire and Perceived Stress Scale (PSS) were administered to 85 volunteer university employees. According to ROSA evaluations, the average physical activity level of academic staff whose working environment was ergonomic was statistically lower than that of academic staff whose work environment was not ergonomic ($p=0.018$). Additionally, mean perceived stress levels were similar in both groups ($p>0.05$). According to the Scandinavian Musculoskeletal System Survey, academic staff experienced the most pain in the neck region in the last 12 months, followed by pain in the back and waist regions. Among these pains experienced in the last 12 months, it was determined that pain in the neck and waist areas prevented individuals from their activities. The findings of this study show that the ergonomic conditions of the working environments of individuals working at universities are related to their physical activity levels.

Keywords: ergonomic, physical activity, stress

1. Introduction

Prolonged periods of computer use during the working day can have detrimental effects on the physical health of employees. Among the causes of discomfort in employees are continuous movements such as keyboard usage, data input, mouse use, prolonged periods of static posture, incorrect body alignment, and inadequate workplace ergonomic design [1]. Ergonomic risk analyses are of great importance for the removal of factors that cause negative effects on employees and the implementation of necessary corrective measures in working environments. The aim of organizing the workplace is

to ensure harmony between work and human. Thus, while the employee experiences less stress and pain, his/her work reaches the highest efficiency [2].

Academic staff working at universities typically work at a computer at an intensive pace in their workplaces and spend the majority of their days at a desk. As with other occupational groups, academic staff can be adversely affected by ergonomic, biological, physical, chemical, psycho-social and environmental factors in their work environment [3]. This situation may result in stress and pain in academic staff. A systematic review found that the physical activity levels of academic staff working at universities were low, with work intensity identified as the main reason for this [4].

The studies indicate that the working conditions of academic staff are challenging and stressful, with long and tiring working hours potentially leading to a decline in physical fitness and the onset of various physical complaints, including pain. While desk-based individuals with suitable working environments have been observed to experience fewer complaints, there is currently no evidence demonstrating the impact of ergonomic arrangements on pain, stress, and physical activity levels among academic staff. The aim of this study was to examine the pain, stress, and physical activity levels of academic staff at the university in accordance with the ergonomic arrangements in their work environments.

2. Methods

The population of this descriptive study is the academic staff of Hacettepe University. In order to be included in the study, participants had to be actively employed as academic staff at the same institution for a minimum of two years and have volunteered to participate.

2.1. Measures

A Demographic Information Form. This included information on age, gender, education, dominant hand, title, etc. The form was prepared by the researchers.

International Physical Activity Questionnaire, (IPAQ). The scale was selected for the purpose of determining the physical activity levels of the individuals. This scale was developed in 2003 by Craig et al. and its validity and reliability studies in Turkey were conducted by Öztürk [5].

The Nordic Musculoskeletal Questionnaire (NMQ). It was employed to assess the musculoskeletal disorders and pain experienced by the individuals included in the study. The Nordic Musculoskeletal Questionnaire was developed in 1987 by Kuorinka et al. A study on the validity and reliability of the scale in Turkey was conducted in 2016 by Kahraman et al. [6].

The Perceived Stress Scale (PSS). It was employed to ascertain the stress levels of the individuals participating in the study. The scale was initially developed by Cohen and colleagues in 1983 with 14 items, but subsequently reduced to 10 by Cohen and Williamson in 1988. The validity and reliability of the scale in Turkey was evaluated by Erci in 2006 [7].

The Rapid Office Strain Assessment (ROSA). The ergonomic evaluation of the working environment was conducted using the ROSA developed by Sonne et al. in 2012 [8], which was employed to determine the ergonomic risk levels of desk workers.

2.2. Statistical Analysis

The data were analyzed using the SPSS 22.0 programme. In the analysis, the Mann-Whitney U test was used to determine the relationship between variables. The significance level for all tests was set at $p<0.05$.

3. Results

At the beginning, ROSA was applied to provide an initial understanding of the ergonomics of the working environment of academic staff. The application of this scale enabled the ergonomic status of the working environments to be determined as those whose working environment is ergonomic (Group 1) and those whose working environment is not ergonomic (Group 2). There were no significant differences between groups according to demographic factors. The difference between physical activity and stress levels between groups is shown in Table 1.

Table 1. Physical activity and stress levels of participants according to the working environment' ergonomic conditions

	Group 1		**Group 2**			
	$\bar{x}$ ± SD	**Min. - Max.**	**$\bar{x}$ ± SD**	**Min. - Max.**	**p**	**Z**
IPAQ	968.360 ± 1024.878	0 - 4986.0	522.083 ± 474.270	0 - 2034.0	**0.018***	-2.356

PSS	22.92 ± 6.763	15 - 39	24.38 ± 6.989	11 - 42	0.250	-1.150

Mann-Whitney U testi *p<0.05

According to the NMQ results, both groups experienced the most pain in the neck, followed by the back and waist regions. In Group 2, neck and waist pain hindered activities, while these hindrances were less in ergonomic environments.

4. Discussion

The results of our study indicated that the ergonomic condition of the working environment of the individuals working at the university affects their physical activity levels. This situation results in pain when combined with intensive working hours.

A comparison of the ergonomic status and physical activity levels of individuals in academic settings revealed a significant difference between groups in terms of physical activity levels. It was determined that the physical activity levels of individuals in an ergonomic work environment were lower. A review revealed that physical activity was overlooked in a study conducted on academic nurses. It was reported that nurses whose work environment was not ergonomic had low physical activity levels [9]. Yalçın found that the physical activity levels of individuals who did not work in an ergonomic environment were higher and stated that there was a negative relationship between work environment ergonomics and physical activity [10]. As evidenced by the literature, the physical activity levels of academics whose work environment is ergonomic are low. Furthermore, the data indicates that academics working in ergonomically designed environments are less likely to engage in physical activity due to a reduced prevalence of physical health issues.

A comparison of the stress levels of academic staff working at the university according to the ergonomic status of the working environment revealed that the stress levels of the two groups in the study were similar. A review of the literature revealed that studies examining the relationship between stress levels and the ergonomic status of the working environment among different work groups were available, but no similar studies were identified that focused on academic staff. In a study examining the risks related to the working environment of healthcare workers, it was found that individuals were exposed to stress due to the intensity of their working lives. However, no significant relationship was found between the ergonomic status of the working

environment and stress levels [11]. In a study conducted on physicians working in a university hospital, it was observed that the ergonomic working environment was not related to the stress and pain levels of physicians. However, a relationship was found between pain and stress [12].

A comparative analysis of the pain levels of academic staff at the university revealed that the most prevalent area of discomfort was the neck, with low back pain being the next most common. In individuals whose working environment was not ergonomic, neck pain was followed by low back pain, while in those whose working environment was ergonomic, neck pain was followed by back pain. A study conducted in a university hospital revealed that intense occupational tasks were the cause of the pain experienced by faculty members, research assistants, and nurses working in the hospital [13]. A study was conducted with academic staff at a University with the objective of determining the suitability of working environments and office furniture for ergonomic working conditions. The office furniture was examined in an ergonomic context. The study reported that the use of non-ergonomic furniture by academic staff and long working hours were associated with pain [14]. The results of this study are consistent with those of previous studies conducted on the same subject in the literature, which involved academic staff and different occupational groups working intensively at the desk.

As a result, the findings of the study show that academic staff who deal with challenging and intense jobs cannot spare enough time for physical activity and ignore the importance of ergonomics. It is suggested that this situation will increase the frequency of pain. For this reason, it is recommended that initiatives be taken to make the necessary environmental arrangements so that all academic staff working at the university can work in an ergonomic environment.

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