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INVESTIGATION OF HEALTHY LIFESTYLE BEHAVIORS AND ANTHROPOMETRIC MEASUREMENTS OF THE ACADEMIC AND ADMINISTRATIVE PERSONNEL OF A UNIVERSITY

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Abstract:
The present work aimed to study the status of the physical fitness and lifestyle behaviors affecting the life of academic and administrative staff of the Ardahan University through the 2015–2016 academic year. The data were collected using the 'Tanita MC–780MA Body Analyzer' that is adopted as a reference standard by the World Health Organization. The healthy lifestyle behavior scale was used for anthropometric measurements. The average score of the university staff, as estimated by the healthy lifestyle behavior scale was identified to be 124.87 in males and 125.08 in females. A negative correlation (below average, r = –.334) was observed upon the comparison of the staff's scores of Body Mass Index (BMI) and healthy lifestyle behaviors. Our findings indicate that the university staff, irrespective of their academic/administrative posts or their age, must adopt a regular exercise/sports routine for a healthy future life.

Keywords: anthropometric, healthy lifestyle, personnel, university, sport

1. Introduction

Health, which has been one of the most important virtues since the existence of mankind, is a dynamic state that can be described at varying degrees from good to

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worst (Roj, 2012). In the process of trying to maintain a healthy life without any disease, it is considered that individuals must try to develop ways of protecting themselves from diseases (Anonymous, 2002).

According to the World Health Organization (WHO), health is not only the absence of illness, but it is a state of complete good health that includes physical, spiritual, and social dimensions (Daniels et al., 2005). Thus, both physical and mental well-being are important features for health. However, at present, considering the definition of health provided by WHO, where the overall health is concerned, it is emphasized that an individual's physical, mental, spiritual and social dimensions interact with each other. Health, which is a collective consequence of an individual's family, environment, and society, is different for each person; thus, health and illness go hand-in-hand (Gibbs & Farste, 2014). According to the WHO estimates, 70–80% and 40–50% of the deaths in developed and developing countries, respectively, are due to the diseases resulting from lifestyle disorders. A person's own attitude and behavior are responsible for the development of such illnesses. It has been reported that health damaging behaviors account for half of the fatal diseases (Yalçınkaya et al., 2007). An individual's healthy lifestyle is one of his/her survival skills in the context of the socio-economic status, education, sports, nutrition, and environmental factors, especially the stress (Özkan & Yılmaz, 2008).

According to the WHO's report of the year 2012, a sedentary lifestyle results in the death of 1.9 million people per year, worldwide. The lack of physical activity leads to an increased risk of obesity in children and adolescents. It has been observed that the children, who acquire a sedentary lifestyle, continue to lead a relatively inactive life in the subsequent years too. Our daily routine is taken care of by various machines to meet our purposes, thereby restricting our daily physical activity. Most of the people remain seated and spend a major chunk of their day watching television or working on computers. With the developments in information technology, there has been a rise in the number of jobs that are based on brain power rather than physical fitness; and such a situation has minimized people's range of motion. However, by following a regular physical fitness routine, people can prevent the occurrence of diseases in their bodies, thwart obesity by natural burning of calories, and they can also slow down the organic stretching that is caused by lipoidosis. Physical activity allows the respiratory and circulatory systems of our body to reach superior state, thereby reducing the risk of a fatality caused by lifestyle disorders such as the coronary artery disease. People can even get rid of loneliness and the posture disorders (Anonymous, 2015). Healthy habits that lead to good health must be inculcated since childhood for a healthy future life (Alikaşifoğlu & Tunabilek, 2000).

Body Mass Index (BMI) has been used as a criterion for height and weight balance, obesity, weakness and malnutrition in adults. BMI has also been recommended by the WHO for classification of excess body weight (İmer & Abakay, 2012). BMI is calculated by the division of body weight to the square of body length (kg/m^2) (Suzeket al., 2005).

Due to seasonal conditions, Ardahan region gets covered by snow during a large part of the year. The people have only limited movement due to the scarce recreational activities in the district. Therefore, it is thought that there is poor lifestyle behavior with minimal physical activity. In view of this, the present study was conducted to evaluate the health promotion behaviors of the university staff dwelling in the region to determine the demographic characteristics that affect their levels of physical activities, and finally to conduct anthropometric measurements. A correlation analysis for the relationship between the obesity status of the staff, their healthy lifestyle behaviors, and the relationship between anthropometric measurements was also done.

2. Materials and Methods

2.1 Participants

The academic and the administrative staff (446 persons) working at Ardahan University were enrolled in the present study. A total of 232 volunteer staff also participated in the survey.

2.2. Procedures

Since the present study did not require precise estimation of a specific event or the average over a variable, the calculation of sample size as a representative of the study population was not done while determining the number of samples.

The most appropriate sample group was identified by the formula: n = Nt2pq / [d2 (N–1) + t2pq]. In order to increase the coverage of the study findings to the sample population and the other populations, a stratified sampling method was chosen that was stratified as per the academic and administrative staff. Furthermore, for an appropriate statistical analysis, the attention was paid to include the minimum sample size required for the analysis. The structural equation modeling requires a large sample size (Memiş, 2004). In our study, since there were two free parameters (academic and administrative) to be estimated by the structural equation model, a minimum sample size of 162 subjects was determined. Taking into account that the study individuals might become unavailable, we included a total of 232 personnel.

2.3 Data Collection Tools

A. Anthropometric measurements

The measurements were done by the Tanita MC–780MA body analyzer and anthropometric measurement set. The participants underwent general as well as individual examinations for percentage, weight, fat ratio, and muscle rate of their bodies. They were questioned for their daily calorie intake and calorie burn, the amount of water intake, internal organ lipoidosis, metabolic (biological) age and bone density and body mass index. The standard values for the body mass index, as recommended by WHO were used for the analysis (WHO, 2003).

B. Healthy lifestyle behaviors

A valid, reliable, and proven 'Healthy Lifestyle Scale' that was developed by Walker, Sechrist and Pender (WHO, 2003) and adapted to Turkish population by Esin (1997) was used in our analysis. The scale evaluates the attitudes and behaviors that promote the health of an individual. The total 48 items of the scale are divided into 6 sub-groups: self-fulfillment, health responsibility, exercise, nutrition, interpersonal support, and stress management. Each sub-group can be independently analyzed. The total score of the scale gives the final estimate of a healthy lifestyle.

In addition to the data collection tools used in the survey, the demographic information was also included in the scale.

2.4 Statistical Analysis

The statistical analysis of the recorded data was performed using the SPSS 22.0 program. The frequency (f) and percentage (%) of the descriptive statistics were calculated in the study. The differences in the dependent variables with regard to the independent variables were calculated by t-test when the distribution of the independent variables was normal. If the distribution was non-normal, Mann-Whitney U test was used. Similarly, to determine whether there was any difference in the dependent variables according to the independent variables (having more than two options) and if it was parametric, one-way analysis of variance (one-way ANOVA) was used, and if it was non-parametric, Kruskal-Wallis H-test was used. Furthermore, the t-test was used for the determination of whether there were differences among the participants whose characteristics were measured by similar tools. The Kolmogorov-Smirnov (K-S) test was used for normality. To determine the level and direction of the relationship between dependent variables, Pearson's Product Moment correlation was used. To determine whether the dependent variables are significant predictors of each other, simple linear regression analysis was performed. The results were evaluated at 95% confidence interval, with $p < 0.05$ as the significance level.

3. Results

The demographic characteristics of the study group are listed in Table I. Of the total participants enrolled in the present study, 65.50% were male and 34.50% were female. Among the total subjects, 38.40% were ≤30 years of age, 39.70% of the individuals were 31–40 years of age, and 21.90% were ≥41 years of age. The percentage of participants who received the primary and secondary education was 15.10%, while 38.80% of the participants possessed license/pre-license and 46.10% of the individuals were post-graduates.

Table 1: Demographic Characteristics of Participants

Characteristics of the Staff		**N (%)**
Whole Staff	Male	152 (65.50)
	Female	80 (34.50)
Academic Staff	Male	71(65.10)
	Female	38 (34.90)
Administrative Staff	Male	81 (65.90)
	Female	42 (34.10)
Age	30 and under 30	89 (38.40)
	Ages 31-40	92 (39.70)
	Ages 41 and above	51 (21.90)
Educational Status	Primary and secondary education	35 (15.10)
	License / pre-license	90 (38.80)
	Postgraduate	107 (46.10)

The frequency of obesity observed among the study subjects is presented in Table II. It has been detected that 39.21% of the university personnel who participated in the survey had normal weight, 47.4% were overweight, and 13.38% of them were obese. However, it has been determined that 10.6% of the participants who were obese in the study were male, whereas 18.69% were women. Further, it was observed that 48% of the male staff and 46.3% of the female staff were overweight (Figure 1).

Table 2: Obesity Frequency According to Gender Variability of University Staff

	Normal Weighted	**Over-weighted**	**Obese**	**Total**
	n (%)	**n (%)**	**n (%)**	**n (%)**
Man	63 (41.40)	73 (48.00)	16 (10.60)	152 (100)
Woman	28 (35.00)	37 (46.30)	15 (18.69)	80 (100)
Total	91 (39.21)	110 (47.40)	31 (13.38)	232 (100)

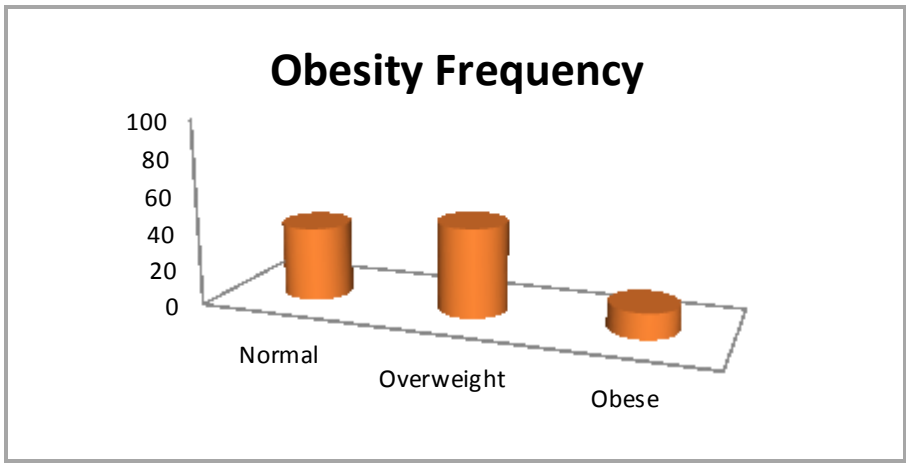

Figure 1: Obesity Frequency of Participants

When the body mass index values were analyzed, it was revealed that among the male personnel, 41.4% were normal, 48% were overweight, 10.60% were obese, while among the female staff, 35% were normal, 46.30% were overweight and 18.69% were obese (Table III). Consequently, according to the participants' gender, differences in body mass index values were found to be statistically significant ($p<0.05$).

Table 3: Distribution of BMI (Body Mass Index) Values by Gender (N = 232)

BMI (kg/m²) Sınıflandırma	Male		Female		Total		X^2	SD	p
	n	%	n	%	n	%			
20.0-24.9 (Normal)	63	41.40	28	35.00	91	39.21			
25.0-29.9(Over-weighted)	73	48.00	37	46.30	110	47.40	26.21	230	**0.001***
≥30.0 (Obese)	16	10.60	15	18.69	31	13.38			

$p<0.05$

Table IV and Table V enlist the statistical information on anthropometric measurements of the university's academic and administrative staff. The average height of male and female academic staff was 175.46 cm and 162.76 cm, mean body weights were 79.68 kg and 63.40 kg; and the average body mass index values were found to be 25.84 kg/m² and 23.97 kg/m², respectively. As shown in Table 7, the average height of male and female administrative staff was 174.04 cm and 160.68 cm; average body weight was 79.44 kg and 62.84; and average body mass index was 26.15 kg/m² and 24.35 kg/m², respectively.

Table 4: Anthropometric Measurement Values of Academic Staff (n = 109)

Anthropometric Measurement	Man				Woman			
	$\bar{x}$	ss	Min.	Max.	$\bar{x}$	ss	Min.	Max.
Height (cm)	175.46	5.4	154.00	189.00	162.76	6.1	153.00	174.00
Weight (kg)	79.68	8.7	54.30	109.30	63.40	4.6	47.10	96.70
Age	37.25	2.4	25.00	72.00	35.16	2.1	25.00	53.00
BMI	25.84	3.8	18.80	33.40	23.97	3.4	17.40	37.10
Body fat (kg)	16.53	3.4	5.50	37.10	16.83	3.2	4.40	34.60
Body fat (%)	20.26	4.8	9.50	33.90	25.61	3.7	10.50	39.10

Table 5: Values of Anthropometric Measurements of Administrative Staff (n = 123)

Anthropometric Measurements	Man				Woman			
	$\bar{x}$	ss	Min.	Max.	$\bar{x}$	ss	Min.	Max.
Height (cm)	174.04	5.7	160.00	190.00	160.68	5.3	153.00	176.00
Weight (kg)	79.44	8.6	48.70	116.40	62.84	5.6	45.80	91.10
Age	34.72	2.2	20	55	31.68	2.6	23	52
BMI	26.15	4.1	17.50	37.80	24.35	3.8	18.70	38.90
Body fat(kg)	16.58	3.6	4.80	37.50	16.19	3.5	7.00	34.20
Body fat (%)	20.10	6.8	8.60	33.30	24.96	5.1	14.90	38.60

Table VI shows Pearson's correlation test results of anthropometric measurements of the university personnel. In the analysis, a weak relationship, in the negative direction (–0.04), between the waist-hip ratio and the skin fold thickness; a weak relationship, in the positive direction (0.28), between the waist-hip ratio and body mass index; and a weak relationship, in the positive direction (0.25), between the waist-hip ratio and relative weight, were recorded. A strong correlation, in the positive side (0.5), between the skin fold thickness and the body mass index, and a strong correlation, on the positive side (0.56), between the skin fold thickness and the relative weight, were observed (Table VI).

Table 6: Correlation Chart of Anthropometric Measurements of University Staff (n = 232)

	Measurement Method			
	Waist Hip Ratio	**Skinfold Thickness**	**BMI**	**Relative Weight**
Waist-Hip Ratio	1	-0.04	0.32*	0.25**
Skinfold Thickness	-0.04	1	0.54**	0.56**
BMI	0.28**	0.54**	1	0.91**
Relative Weight	0.25**	0.56**	0.91**	1

As estimated by the Healthy Lifestyle Scale and its sub-groups, the average healthy lifestyle score of the female staff was 125.08, whereas that of the male staff was 124.87 (Table VII). The highest and lowest scores that can be estimated by the Healthy Lifestyle Behavior scale were 192 and 48, respectively. Thus, there was a significant difference between the gender-based healthy lifestyle behaviors of the staff. Moreover, in relation to the interpersonal support, which is a sub-group in the Healthy Lifestyle behavior Scale, a significant difference was found between the two gender groups (p=0.02).

Table 7: Comparison of Healthy Lifestyle Scale Score and Subscale Scores by Gender of Participants

	Gender				
	Male (n=152)		**Female (n=80)**		**p**
	Average	**ss**	**Average**	**ss**	
Self-Realization	36.45	5.40	35.65	4.14	0.05
Health Responsibility	20.12	5.11	21.94	6.12	0.54
Exercise	14.18	3.85	9.80	2.42	0.06
Nutrition	16.20	2.50	18.15	2.67	0.07
Interpersonal Support	23.4	3.19	25.40	3.02	**0.02***
Stress Management	24.10	3.41	21.02	3.85	0.08
Healthy Lifestyle Behaviors	124.87	22.85	125.08	17.80	**0.01***

*p<0.05

As depicted in Table VIII, a negative and meaningful correlation at the middle was found between the participants' obesity status and the healthy lifestyle behaviors (r = −.334). Consequently, the correlation between the average scores that were obtained from obesity cases and healthy lifestyle behaviors of the university's academic and administrative staff were in the negative direction.

Table 8: Pearson Correlation Test Results of Participants' Obesity Frequency and Healthy Life Style Behaviors

		Obesity Frequency	**Healthy Lifestyle**
	Pearson Correlation	1	-.334(*)
Obesity Frequency	P		.000
	N	232	232
Healthy Lifestyle	Pearson Correlation	-0.334(*)	1
	P	.000	
	N	232	232

*p<0.05

4. Discussion

Obesity, during the recent years, has shown a prevalence of 35% and has been regarded a global epidemic. It is one of the most critical health problems of today (Esin, 1997). As in adults, obesity and weight gain have also become major health issues in children and adolescents (Walker et al., 1987).

The present work aimed to study the lifestyle behaviors and their consequences on the complete health status of the university personnel. The subjects enrolled in the research were overweight and obese. The total obesity rate of all the participants was 13.38% (male: 10.6%, female: 18.69%). This indicated that the female staff had a higher risk of being obese in future than the male participants. The reason for this may be the lesser mobility of the female personnel than the male staff. In contrast to our observations, Giampietro reported that the prevalence of obesity was higher in males than in females. Although the developed countries have demonstrated a downfall in the prevalence of obesity since 2006, the prevalence of obesity has increased across the world. In the developed countries, the prevalence of obesity was found to be 23.8% in boys, while 22.6% in girls (Giampietro et. al., 2002). For developing countries, the prevalence of obesity between 1980 and 2013 rose from 8.1% to 12.9% in boys and from 8.4% to 13.4% in girls (Güney et al., 2003).

The average body mass index values of male and female academic staff were observed to be 25.84 kg/m^2 and 23.97 kg/m^2, respectively, while those for the male and female administrative personnel were recorded as 26.15 kg/m^2 and 24.35 kg/m^2, respectively. Such values indicate that most of the participants were in the pre-obese period and seemed to be at risk of getting obese. In a previously reported similar study, body mass index values were reported as 22.8 kg/m^2 for men and 21.0 kg/m^2 for women (Wijlaars et al., 2011).

Our findings show that the average lifestyle behaviors of the female staff were higher than their male counterparts. Further, in context to interpersonal support, a significant difference was observed between the genders. Similar observations were reported by Imer and Abakay (2012), who stated that the health behaviors of the University's administrative staff, with regard to health responsibility, were better in females than in males. Demir et al. (2015) found that the health behaviors, physical activity, nutrition, interpersonal relations, and stress management behaviors showed significant differences according to gender, where the average behavior scores of female students were higher than the male students.

We did not observe any significant difference in the physical activity and the exercise subscale among males and females. Our results are in concordance with a

previous study, conducted with 208 physical education teachers, there was no significant gender-associated difference in the exercise sub-group (Demir et al., 2015). However, on the contrary to our findings, Tiryaki and Abakay (2017), Koçoğlu and Akın (2009) reported that exercise was in favor of male participants of their study. Tiryaki and Abakay (2017) reported that male academics conducted regular exercises in a more planned and organized way in their daily routine than female academics. Such a variation may be attributed to the restricted and inadequate environments for physical activity for females than the males. Another reason might be the responsibility of women toward their home and children apart from the working hours. Güler et al. (2008) notified that the academic staff did not display sufficient physical activity. However, the problems that arise due to changes in the lives of individuals and especially the life of a relatively inactive person are the most important causes of chronic diseases and fatalities of our times (Bilir, 2001). Our research was carried out in the province of Ardahan that spans extreme geographical conditions, and this can be attributed as the reason for the low frequency of physical activity and thus, bad lifestyle behaviors.

Our analysis revealed a significant difference between health responsibility, physical activity, nutrition, and interpersonal relations, which is in accordance with a previous report by Yalçınkaya et al. (2007), who reported a significant difference in the nutrition sub-group of the healthy lifestyle behavior scale, according to the working duration of medical staff. As compared to the short time serving staff, the academic and administrative staff, studied herein and who work for a longer duration, have a more stable and sedentary working system and they are aware that it is important to eat well to be healthy. The increase in mean scores of healthy lifestyle behaviors with age can be related to such causes: having more knowledge and experience in the field of health, maintaining a more regular and balanced lifestyle, and age-related health problems (Güler et al., 2008).

5. Conclusion

In the study, it was determined that although females' health-style behavior scores were more than the males, they were at a higher risk of being obese in future. This indicates that the female staff is more conscious than their male counterparts, but due to high responsibilities, they do not have enough time for physical activity and they become motionless. In general, individuals need to be made aware of the importance of healthy lifestyle behaviors for their healthy future lives regardless of their academic and administrative titles. Our findings strongly suggest that people must start doing regular

sports activity that will not only benefit their physical health but will also promote their overall well-being.

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