

Research Article / Araştırma Makalesi

Higher physical activity levels reflect better lifestyle behaviours amongst white collar workers: A descriptive cross-sectional study

Beyaz yakalı çalışanların fiziksel aktivite düzeyi ve sağlıklı yaşam tarzı davranışları-Tanımlayıcı kesitsel bir çalışma

Burçin Karavelioglu¹, Günsu Soykut¹, Gonca İnanç², Adile Öniz³

¹Department of Nutrition and Dietetics, Near East University, Nicosia, Turkish Republic of Northern Cyprus

²Department of Biophysics, Near East University, Nicosia, Turkish Republic of Northern Cyprus

³Faculty of Health Sciences, Near East University, Nicosia, Turkish Republic of Northern Cyprus

ABSTRACT

Objective: To examine the relationship between physical activity level and healthy lifestyle behaviours of white-collar workers.

Materials and Methods: The International Physical Activity Questionnaire Short Form (IPAQ-SF) was used to determine the level of physical activity, and the Healthy Lifestyle Behaviours Scale-II (HLBS-II) was used to evaluate the lifestyle behaviours. The researchers recorded anthropometric measurements of the participants via face-to-face method and questionnaires were implemented via online forms. Statistical analysis of the study was performed with the IBM SPSS Statistics version 20.0 program. Descriptive analysis was done, and all the data were presented as means and (\pm) standard deviation (SD). Statistical significance was set at $p < 0.05$.

Results: In total, 229 (mean age: 35.75, 158 female) white-collar workers participated in the study. 90.4% of the participants had either undergraduate or postgraduate degrees. 55.5% of the participants were found to be inactive as stated by the IPAQ-SF scores. According to HLBS-II results, active participants had significantly higher exercise, nutrition, and stress management sub-scale scores ($p < 0.05$). There was no significant difference between self-actualization, interpersonal relationship, and health responsibility scores of active and inactive participants ($p > 0.05$). Overall, active participants with normal BMI had significantly higher HLBS-II scores than overweight and obese participants ($p < 0.05$).

Conclusions: Our study shows a positive relationship between physical activity levels and healthy lifestyle behaviours in office work. In order to increase the quality of life of white-collar workers, changing their behaviours such as physical inactivity and unhealthy diet through education intervention on healthy lifestyle holds a vital place.

Keywords: Physical activity, Healthy Lifestyle Behaviours Scale-II, white-collar workers, body mass index

ÖZ

Amaç: Beyaz yakalı çalışanların fiziksel aktivite düzeyi ile sağlıklı yaşam biçimi davranışları arasındaki ilişkiyi incelemektir.

Gereç ve Yöntemler: Fiziksel aktivite düzeyini belirlemek için Uluslararası Fiziksel Aktivite Anketi Kısa Formu (IPAQ-SF), yaşam tarzı davranışlarını değerlendirmek için Sağlıklı Yaşam Tarzı Davranışları Ölçeği-II (HLBS-II) kullanılmıştır. Katılımcıların antropometrik ölçümleri yüz yüze yöntem ile, anketleri ise çevrimiçi form aracılığı ile kaydedilmiştir. Çalışmanın istatistiksel analizi, IBM SPSS Statistics version 20.0 programı ile yapılmıştır. Çalışmada tanımlayıcı analizler ortalama (\pm) ve standart sapma (SD) olarak verilmiştir. İstatistiksel anlamlılık düzeyi $p < 0,05$ olarak belirlenmiştir.

Bulgular: Çalışmaya 229 (ortalama yaş: 35,75, 158 kadın) beyaz yakalı çalışan katılmıştır. Katılımcıların %90,4'ü lisans ve lisansüstü eğitim düzeyine sahiptir. Katılımcıların %55,5'inin IPAQ-SF puanlarına göre inaktif olduğu tespit edilmiştir. HLBS-II sonuçlarına göre aktif olan katılımcıların egzersiz, beslenme ve stres yönetimi alt ölçek puanları anlamlı olarak daha yüksek bulunmuştur ($p < 0,05$). Aktif ve inaktif katılımcıların manevi gelişim, kişilerarası ilişkiler ve sağlık sorumluluğu puanları arasında anlamlı bir fark bulunmamıştır ($p > 0,05$). Normal BKİ'ye sahip olan aktif katılımcıların HLBS-II puanları, fazla kilolu ve obez katılımcılara oranla anlamlı derecede daha yüksek bulunmuştur ($p < 0,05$).

Sonuçlar: Çalışmamız, fiziksel aktivite düzeyi ile sağlıklı yaşam biçimi davranışları arasında önemli bir ilişki olduğunu göstermektedir. Beyaz yakalı çalışanların yaşam kalitelerini artırmak için sağlıklı yaşam tarzına yönelik eğitim müdahaleleri yaşam kalitesinin artması için etkili olabilir. Sedanter yaşam tarzı ve sağlıksız beslenme gibi alışkanlıkların olumlu yönde değiştirilmesi sağlıklı bir birey olmak için önem arz etmektedir.

Anahtar Sözcükler: Fiziksel aktivite, Sağlıklı Yaşam Tarzı Davranışları Ölçeği-II, beyaz yakalı çalışanlar, beden kütle indeksi

INTRODUCTION

The effects of exercise, active living, and proper nutrition in protecting individuals from chronic diseases are well-known. Physical activity is the body movement people make

using the musculoskeletal system, increasing the heart rate and respiratory rate. It effectively protects healthy lifestyle behaviours, the health of the individual, and mental and

Received / Geliş: 09.07.2021 · Accepted / Kabul: 09.12.2021 · Published / Yayın Tarihi: 31.03.2022

Correspondence / Yazışma: Adile Öniz · Yakın Doğu Üniversitesi, Sağlık Bilimleri Fakültesi, Kıbrıs · adile.oniz@neu.edu.tr

Karavelioglu B, Soykut G, Inanc G, Oniz A. Higher physical activity levels reflect better lifestyle behaviours amongst white collar workers: A descriptive cross-sectional study. Turk J Sports Med. 2022 Mar 31st; <http://doi.org/10.47447/tjism.0592>

physical health (1, 2). Nowadays, inactivity continues to increase, and women are generally more inactive than men (3). Postponement of meals during the day and a sedentary working environment of white-collar workers increase the risk of weight gain (4), and cardiovascular diseases with increased blood cholesterol levels (5). On the other hand, regular physical activity was associated with lower anxiety levels (6). In addition, physical activity was shown to protect people from various cancer types (7).

There are some common definitions for working individuals, such as blue-collar, pink-collar, and white-collar. White-collar workers are defined as people who work in administrative jobs within an office environment, and do more desk jobs that require more intellectual involvement (8). Employees are usually at risk of inactivity due to limiting workspaces, busy work schedules, and long working hours (9). In addition, they are physically, mentally, and socially at risk because of stress factors (10).

The studies that had examined the relationship between an individual's activity level and healthy lifestyle behaviours mainly were conducted with healthcare professionals (11), students (12, 13), and academicians (14). The number of studies that include all white-collar occupational groups which compared these occupational groups by their activity level is limited (15). Generally, younger white-collar workers with higher socioeconomic status can have common health problems such as job stress, depression, insomnia, neck pain, hyperlipidaemia, and stomach ulcers (16). Lack of physical activity in white-collar workers can be a risk factor for the development of cardiovascular and metabolic diseases (17, 18). The places where individuals can be physically active during the day are their workplaces, homes, use of active transportation, and areas that provide them with the chance of movement in their free time. Studies have shown that workplace interventions might help to protect people's overall health status through increasing mobility of people and, educating employees about adequate and balanced nutrition (19).

In order to achieve an increase in health promotion, healthy lifestyle behaviours such as awareness and necessary life skills should be encouraged. Hence awareness and healthy lifestyle, educational and economic status play a critical role. According to studies, the educational status as well as economic status of an individual would be affecting the quality of life and healthy lifestyle behaviours. In this research, health promotion is analysed under the categories of nutrition, exercise, stress management, interpersonal relationships, and spiritual development (20-23).

White-collar employees have an important place in society. In addition to increasing work efficiency and being a role

model for young people, protecting the workforce's health also lowers overall health costs. The study aims to investigate the relationship between the activity levels and healthy lifestyle behaviours of white-collar workers and raise awareness for a healthy life.

MATERIAL and METHODS

Subjects

Common white-collar workers such as bankers, teachers, and academicians living in the Northern part of Cyprus were invited via social media channels and e-mail to participate in the study. Those who were accepted as respondents were chosen among the applicants according to the inclusion criteria set up by researchers. During the data collection period between December 2020 and February 2021, disabled individuals, unhealthy people, pregnant women, and breastfeeding mothers were excluded from the study.

This study was conducted among people aged between 18 to 62 years. The informed consent form was signed by the people who accepted to participate in the study. Participants declared that they were willing to participate in this study voluntarily via google forms by signing the consent form. This study was approved by the local Ethics Committee (Near East University Ethics Committee - 2020/85-1212).

The survey was used in order to identify the general information, background information, health status, physical activity, and healthy lifestyle behaviours of the participants.

The first section of the survey contains general background information, including name-surname or initials (optional), age, gender, and health-related questions such as health problems diagnosed by doctors.

Anthropometric Measurements

The bodyweight of the participants was measured by Tanita BF-350 (Tanita, Tokyo, Japan) scale. The height of the participants was measured by using the inelastic measure in the Frankfurt plane. The body composition analysis was conducted by using Tanita single frequency body fat analyzer (Tanita BF-350, Japan). In order to ensure consistency, the device was calibrated regularly. Weighing was done after entering age and height. The assigned researcher recorded both measurements via face-to-face method, thus limiting the risks of interrater reliability. Body mass index (BMI) was calculated using a formula in which the body weight in kg was divided by the square of the height (m). The participants were categorized according to World Health Organization's (WHO) criteria for the BMI classification.

Calculation of the International Physical Activity Questionnaire Short Form (IPAQ- SF)

In order to calculate and determine the physical activity level, IPAQ- SF short form, which was validated for the Turkish population, was used (24). The IPAQ-SF calculates the physical activity status, which is segmented as walking, moderate level, and intense activity, which is based on the time for activity (minutes) and frequency (days per week) of the physical activity (25). The Metabolic Equivalent of Task (MET) value is used to calculate the physical activity score, where MET used for walking is 3.3, 4.0 for moderate physical activity, and 8.0 for the vigorous level of activity. In this study, the activity level was evaluated in two categories as active and inactive. In accordance with the IPAQ scoring, those who had a score below 600 MET were accepted as inactive, and those who had more than 600 MET, who were either vigorously or moderately active, were classified as active (25).

Calculation of the Healthy Lifestyle Behaviours Scale-II (HLBS-II)

The HLBS was first described by Walker in 1987, updated in 1996. Reliability and validity were determined by Bahar et al. for the HLBS-II (23). It consists of 52 units and 6 sub-units. The questionnaire is conducted on a 1-4 Likert scale where 1 is never, 2 is sometimes, 3 is often, and 4 is always. The lowest mark that could be obtained from the scale is 52, and the highest is 208. The 6 sub-units mentioned are health responsibility, exercise, nutrition, self-actualization, interpersonal relations, and stress management.

Within the total of 52 questions under the category of nutrition, self-actualisation, health responsibility, and interpersonal relationship-related, each category has nine questions that make up 36 questions. The physical activity and stress management sub-unit consists of eight questions and make the rest of the questionnaire. There is a direct correlation between scores and positive behaviour, where higher scores show more positive behaviour (23).

Statistical Analysis

Statistical analysis was performed with the IBM SPSS Statistics version 20.0 program. Descriptive analysis was done, and all the data were presented as means and (\pm) standard deviation (SD). Statistical significance was set at $p < 0.05$. In the analysis of the data, one-way analysis of variance (ANOVA) was used to compare the groups according to the distribution of data and the number of groups.

RESULTS

The number of participants was 229 (158 female). The average age of the participants was 35.75 ± 9.38 years, of 7.4% of participants were 18-24 years old, 44.5% 25-34, 26.2% 35-44,

17.9% 54-55, 3.9% were in the 55-62 age group. In total, 158 of the participants (69%) were women, and 71 (31%) were men. According to educational status, 45% of the participants were either master or Ph.D. graduates, 45.4% had an undergraduate degree, and 9.6% were high school or below graduates.

The physical activity levels of 229 white-collar workers participating in the study were measured with IPAQ-SF and evaluated in two groups as inactive and active. It was determined that 102 (44.5%) of participants were active and 127 (55.5%) were inactive according to IPAQ-SF scores.

In terms of HLBS-II total scores, the nutrition subscale of the group with regular exercise habits was found to be 22.50 ± 4.5 on average in the active and 19.67 ± 4.01 on the inactive group. It was determined that active participants had significantly higher nutritional knowledge than inactive participants ($p < 0.001$).

The mean HLBS-II exercise subscale scores of active participants were found to be 16.16 ± 4.01 , and significantly higher than inactive participants with a mean score of 13.39 ± 3.14 ($p < 0.001$).

When the stress management subscale of white-collar participants was evaluated according to their activity status, the HLBS-II mean score was found to be 15.80 ± 2.89 for inactive participants. In contrast, the mean score was calculated as 16.74 ± 3.81 for active participants, which was significantly higher ($p < 0.05$).

Similar results were found when other subscales of HLBS-II were compared with active and inactive groups. The mean self-actualization score was 18.66 ± 4.60 for inactive participants, and 18.93 ± 4.88 was the mean score for active white-collar workers. There was no significant difference between inactive and active participants in interpersonal relationship subscale scores which were 18.92 ± 4.54 and 19.16 ± 5.23 , respectively.

The health responsibility scores were calculated as 17.37 ± 3.06 in inactive participants and 18.236 ± 3.64 in active participants. Although active participants had higher scores, there was no significant difference between inactive and active groups.

Participants with normal BMI had significantly higher scores for healthy lifestyle behaviours in the group with regular exercise habits ($p < 0.001$). There was no significant difference in HLBS-II scores of overweight and obese individuals.

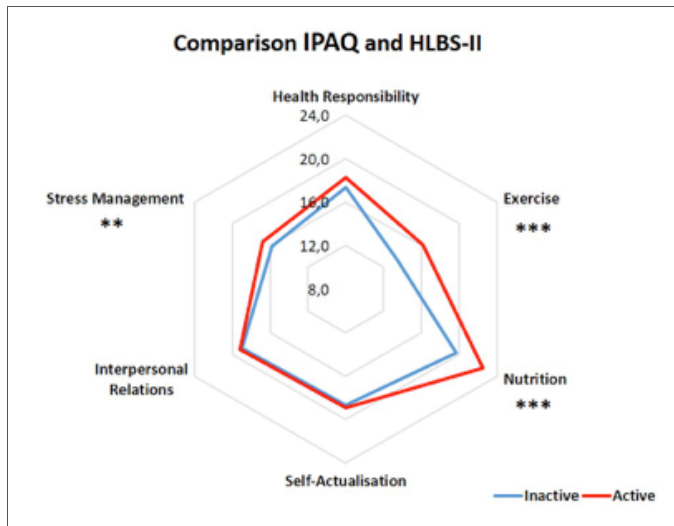


Figure 1. IPAQ-SF Score Comparison. These components include behavioural and lifestyle parameters. The radar chart axes start with a minimum value of 8, which is the least score, and scores increase from the centre towards outwards (the highest score). ** $p \leq 0.01$, *** $p \leq 0.001$

DISCUSSION

The study results stated that the increase in the white-collar workers' healthy lifestyle behaviour scores and their physical activity level scores were directly proportional. In a similar study of young healthcare worker candidates, in today's conditions where the sedentary lifestyle is increasing, physical activity levels were found to be high (14). It had been shown that the increase in the level of physical activity positively affects both nutritional and stress management scores. It is expected that white-collar workers having high scores on healthy lifestyle behaviours positively affect healthy life awareness development.

In our study, 55.5% of white-collar workers had found to be inactive. On the other hand, Ko et al. research study showed that 66.5% of white-collar workers are active. Plans and strategies should be made to increase physical activity in work environments for the improvement of health, where an important time period of the day passes (26). According to a study by Rollo et al., it had been observed that the employees could reduce their sitting time and increase the activity level during the day with the help of brief informative notes emphasizing the importance of physical activity. It had also been shown that improving physical activity levels helped the improvement of health in participants (27). In another study on non-white-collar and active workers, neither the activity status of the participants nor the increase in the physical activity of the employees did affect the healthy lifestyle behaviour scores (28). Nawrocka et al. studied the effects of physical activity periods performed at different time intervals on health in the workplace found that an increase in physical activity, even for a short time of 10 minutes, might play an active role in protecting and promoting overall health status (29). Huse et al. showed that with given information and motivation which were provided for staff to access food environments and activity facilities can support their well-being and help adaptation of healthy behaviours (30).

The effect of regular exercise programs on energy expenditure is well-known. In a study evaluating the health benefits of the activity applied in work environments, it was found that the blood parameters of the participants had shown positive improvements as the activity level of the participants increased (31).

In a different study where the nutritional habits, exercise level, self-efficacy, and quality of life of white-collar workers were evaluated; It has been determined that the physical activity levels of the participants were also high who had higher scores in self-efficacy, quality of life, and obesity management (32). A similar randomized controlled trial showed the positive effect of healthy lifestyle behaviours on nutrition and weight management (15).

In another research study conducted in the workplace, the activity status and the characteristics of the individuals were evaluated where it was observed that the conditions such as age and gender did not affect the activity status of the participants (33). In another research, it was stated that working conditions led individuals to a more disciplined lifestyle and women tend to be more compatible with disciplined work and white-collar women workers HLBS-II point higher than non-workers (34).

Our study indicated that participants with normal BMI had higher lifestyle behaviours scores than participants with obesity. From this information, it can be suggested that an individual's health behaviours can be improved with healthy nutritional habits and exercise training. Our participants stated that they gained awareness while filling the questionnaire and during anthropometric measurements. Unlike our results, Nacar et al. studied medical students and did not find any significant difference and no relationship between BMI and HLBS-II (37). A South African study showed that white-collar workers had higher rates of overweight and obesity (5).

Educational status is thought to play a significant role in protecting health. It is expected that as the educational status increases, the awareness of individuals about health and risks of unhealthy lifestyle increases and might help them to adapt to a healthier lifestyle. In a study, it was shown that educational status of participants were directly related with healthy lifestyle behaviour scores (35).

A group of white-collar workers in our study were healthcare professionals. It is thought that healthcare professionals adapt better to healthy living conditions in terms of nutrition and physical activity levels among occupational groups (14). In a study conducted with nursing students, it was determined that as the students' healthy lifestyle behaviours scale scores increased, healthy body weight was more easily maintained (36). The study showed that the application of the healthy lifestyle behaviours scale in young health workers could effectively improve health with early intervention (36).

In our study, physically active white-collar workers had higher mean HLBS-II scores than inactive ones. In a similar study conducted with healthcare professionals, it was found that healthcare professionals adopt healthier nutritional habits, more physical activity, and more health responsibility behaviours than employees in other professions. In the same study, no difference was observed in terms of self-actualization, interpersonal relations, and stress management (14).

It had been stated that preparing training courses and education programmes for individuals who are inadequate in protecting and improving their health, can be beneficial and may improve their health status (30). Aygar et al. determined that education programs on healthy lifestyle behaviours increased students' healthy lifestyle behaviour levels (38).

It is known that the stress experienced in the work environment adversely affects overall health status. In our study, stress management scores of active individuals were higher than inactive individuals. In a similar study, it was stated that stress factors in the work environment negatively affect overall health status. In the same study, it was shown that interventions on activity and nutrition in the workplace could positively affect by reducing stress levels (39). Another study with university students had shown that an increase in physical activity is effective in coping with stress (40).

Studies have found that gender, age, marital status, education status, income level, stress, and perceived health status are associated with factors affecting healthy lifestyle behaviours (13, 14, 39, 40).

As the study was conducted during the COVID-19 pandemic, it had brought some difficulties in terms of face-to-face interview method.. For instance, those with chronic disease, disabled individuals, unhealthy people, pregnant women, and breastfeeding mothers were excluded from the study.

CONCLUSION

There is a positive relationship between physical activity levels and healthy lifestyle behaviours. However, the physical activity level of the white-collar workers was found to be insufficient. While raising awareness about the importance of physical activity and nutrition in healthy lifestyle behaviours of white-collar workers, further studies should be conducted on how to implement a balanced and proper diet and increase physical activity levels of white-collar workers with proper time management.

Acknowledgments

The authors would like to thank participants of this study. This study did not receive a specific grant from any financing organization in public, commercial or non-profit sectors. The authors do not state a conflict of interest.

Ethics Committee Approval / Etik Komite Onayı

The approval for this study was obtained from Near East University Ethics Committee (Decision no: 2020/85-1212 Date: 26.11.2020).

Conflict of Interest / Çıkar Çatışması

The authors declared no conflicts of interest with respect to authorship and/or publication of the article.

Financial Disclosure / Finansal Destek

The authors received no financial support for the research and/or publication of this article.

Author Contributions / Yazar Katkıları

Concept: BK, GS, GI, AO; Design: BK, GS, GI, AO; Supervision: BK, GS, GI, AO; Materials: BK, GS, GI, AO; Data Collection and/or Processing: BK, GS, GI, AO; Analysis and Interpretation: BK, GS, GI, AO; Literature Review: BK, GS, GI, AO; Writing Manuscript: BK, GS, GI, AO; Critical Reviews: BK, GS, GI, AO

REFERENCES

- Hamer M. Psychosocial stress and cardiovascular disease risk: the role of physical activity. *Psychosom Med.* 2012;74(9):896-903.
- Nawrocka A, Garbaciak W, Cholewa J, Mynarski W. The relationship between meeting of recommendations on physical activity for health and perceived work ability among white-collar workers. *Eur J Sport Sci.* 2018;18(3):415-22.
- Guthold R, Stevens GA, Riley LM, Bull FC. Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *Lancet Glob Health.* 2018;6(10):e1077-86
- Narisada A, Suzuki K. Association between procrastination, white-collar work and obesity in Japanese male workers: a cross-sectional study. *BMJ Open.* 2019;9(11):e029931
- Aginsky KD, Constantinou D, Delpont M, Watson ED. Cardiovascular disease risk profile and readiness to change in blue-and white-collar workers. *Fam Community Health.* 2017;40(3):236-44.
- Dowell CP, Carlin A, Capranica L, Dillon C, Harrington JM, Lakerveld J et al. Associations of self-reported physical activity and anxiety symptoms and status among 7,874 Irish adults across harmonised datasets: a DEDIPAC-study. *BMC Public Health.* 2020;20(1):365.
- Patel AV, Friedenreich CM, Moore SC, Hayes SC, Silver JK, Campbell KL, et al. American College of Sports Medicine roundtable report on physical activity, sedentary behaviour, and cancer prevention and control. *Med Sci Sports Exerc.* 2019;51(11):2391-402.
- Lips-Wiersma M, Wright S, Dik B. Meaningful work: Differences among blue-, pink-, and white-collar occupations. *Career Dev Int.* 2016;21(5):534-51.
- Patterson R, McNamara E, Tainio M, de Sá TH, Smith AD, Sharp SJ, et al. Sedentary behaviour and risk of all-cause, cardiovascular and cancer mortality, and incident type 2 diabetes: a systematic review and dose response meta-analysis. *Eur J Epidemiol.* 2018;33(9):811-29.
- Mustafa M, Illzam EM, Muniandy RK, Hashmi MI, Sharifa AM, Nang MK. Causes and prevention of occupational stress. *IOSR-JDMS.* 2015;14(11):98-104.
- Pirinci E, Rahman S, Durmuş AB, Erdem R. Factors affecting health-promoting behaviours in academic staff. *Public Health.* 2008;122(11):1261-3.
- Holtz KA, Kokotilo KJ, Fitzgerald BE, Frank E. Exercise behaviour and attitudes among fourth-year medical students at the University of British Columbia. *Can Fam Physician.* 2013;59(1):e26-32.
- Saldıran TÇ, Tanrıverdi M, Cakar E. Relationship between physical activity and healthy lifestyle behaviours in college students. *J Basic Clin Health Sci.* 2019;3(2):58-62.
- Profis M, Simon-Tuval T. The influence of healthcare workers' occupation on Health Promoting Lifestyle Profile. *Ind Health.* 2016;54(5):439-47.
- Mouodi S, Hosseini SR, Ghadimi R, Cumming RG, Bijani A, Mouodi M, et al. Lifestyle interventions to promote healthy nutrition and physical activity in middle age (40-60 Years) adults: A randomized controlled trial in the north of Iran. *J Res Health Sci.* 2019;19(1):1-8.
- Tsai SY. A study of the health-related quality of life and work-related stress of white-collar migrant workers. *Int J Environ Res Public Health.* 2012;9(10):3740-54.
- Krause N, Arah OA, Kauhanen J. Physical activity and 22-year all-cause and coronary heart disease mortality. *Am J Ind Med.* 2017;60(11):976-90.
- Ko KJ, Kim EH, Baek UH, Gang Z, Kang SJ. The relationship between physical activity levels and metabolic syndrome in male white-collar workers. *J Phys Ther Sci.* 2016;28(11):3041-6.
- Eze NM, Maduabum FO, Onyeye NG, Anyaegunam NJ, Ayogu CA, Ezeanwu BA, et al. Awareness of food nutritive value and eating practices among Nigerian bank workers: Implications for nutritional counselling and education. *Medicine.* 2017;96(10):1-6.
- sbu.saglik.gov.tr [Internet]. TC. Sağlık Bakanlığı: Sağlığın Teşviki ve Geliştirilmesi Sözlüğü; 2011 [cited 2021 June 28]. Available from: <https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/Sa%20C4%9F%20B1%20C4%9F%20Te%20C5%9Fviki%20>
- Ozyazıoğlu N, Kılıç M, Erdem N, Yavuz C, Afacan S. Determinants of nursing students' healthy life style. *J Hum Sci.* 2011;8(2):277-332.
- Aksoy T, Ucar H. Healthy lifestyle behaviors of nursing students. *Journal of Hacettepe University Faculty of Nursing.* 2014;1(2):53-67.
- Bahar Z, Beşer A, Gürdes N, Ersin F, Kissal A. Healthy Life Style Behaviour Scale II: A Reliability and validity study. *J Clin Nurs.* 2008;12(1):1-3.
- Sağlam M, Arıkan H, Savcı S, İnal-İnce D, Bosnak-Guclu M, Karabulut E, et al. International physical activity questionnaire: reliability and validity of the Turkish version. *Percept Mot Skills.* 2010;111(1):278-84.
- Hagströmer M, Oja P, Sjörström M. The International Physical Activity Questionnaire (IPAQ): A study of concurrent and construct validity. *Public Health Nutr.* 2006;9(6):755-62.
- Straker L, Mathiassen SE, Holtermann A. The 'Goldilocks Principle': designing physical activity at work to be 'just right' for promoting health. *Br J Sports Med.* 2018;52(13):818-19.
- Rollo S, Prapavessis H. Sedentary behaviour and diabetes Information as a source of motivation to reduce daily sitting time in office workers: A pilot randomised controlled trial. *Appl*

- Psychol Health Well-Being*. 2020;12(2):449-70.
28. Gocer S, Mazıcıoglu MM, Ulutabanca RO, Unalan D, Karaduman M, Tarhan KS. Assessment of healthy lifestyle behaviours in traveling seasonal agricultural workers. *Public Health*. 2020;180:149-53.
 29. Nawrocka A, Mynarski A, Cholewa J, Garbaciak W. Leisure-time physical activity of Polish white-collar workers: A cross-sectional study. *Hong Kong J Occup Ther*. 2017;29(1):19–25.
 30. Huse O, Palermo C, Evans M, Peeters A. Factors influencing healthy eating and physical activity amongst school staff. *Health Promot Int*. 2020;35(1):123-31.
 31. Mulchandani R, Chandrasekaran AM, Shivashankar R, Kondal D, Agrawal A, Panniyammakal J, et al. Effect of workplace physical activity interventions on the cardio-metabolic health of working adults: Systematic review and meta-analysis. *Int J Behav Nutr Phys Act*. 2019;16(1):1-16.
 32. Sok SR, Kim OS, Park MH. Effects of obesity management program provided by occupational health nurse in worksite. *West J Nurs Res*. 2019;41(5):728-42.
 33. Sitthipornvorakul E, Waongenngarm P, Lohsoonthorn V, Janwantanakul P. Is the number of daily walking steps in sedentary workers affected by age, gender, body mass index, education, and overall energy expenditure? *Work*. 2020;66(3):637-44.
 34. Arslan C, Ceviz D. Evaluation of obesity prevalence and health promoting life-style profiles of housewives and working women. *Firat University Medical Journal of Health Sciences*. 2007;21(5):211-20.
 35. Pasinlioglu T, Gozum S. Health behaviours of health staff working in the primary health services. *Cumhuriyet Sci J*. 1998;2(2):60–8.
 36. Tedik SE, Hacialioglu N. Investigation of the relationship between excess weight and healthy lifestyle behaviours in nursing students. *Int Refereed J Nurs Res*. 2017;10:59-80.
 37. Nacar M, Baykan Z, Cetinkaya F, Arslantas D, Ozer A, Coskun O, et al. Health promoting lifestyle behaviour in medical students: a multicentre study from Turkey. *Asian Pac J Cancer Prev*. 2014;15(20):8969-74.
 38. Aygar H, Zencirci SA, Emiral GO, Alaiye M, Soysal A, Onsuuz MF, et al. Assessment of health-promoting lifestyle behaviours of adults living in the semi-rural area. *North Clin Istanbul*. 2019;6(1):13–20.
 39. Akkoyunlu Y, Acet M, Karademir T. Evaluation of healthy lifestyle behaviour level of active athletes and sedentary students study at physical education and sports college. *The Anthropologist*. 2017;28(1-2):99-106.
 40. Schultchen D, Reichenberger J, Mittl T, Weh TR, Smyth JM, Blechert J, et al. Bidirectional relationship of stress and affect with physical activity and healthy eating. *Br J Health Psychol*. 2019;24(2):315-33.