Research Article

Evaluation of Healthy Lifestyle Behaviors of Healthcare Workers; A Single Center Experience

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ABSTRACT

Objective: The aim was to evaluate the healthy lifestyle behaviors of healthcare professionals and to reveal the factors affecting these behaviors.

Methods: Research data were collected using the Health-Promoting Lifestyle Profile II (HPLP II) questionnaire and a 23-question social-demographic survey form (including gender, age, marital status, body weight, and height, occupational group as a health worker, years of experience at the profession, weekly working hours, working style, socioeconomic level, living status, health status, presence of chronic disease, having routine health check-ups, sleep duration, sleep quality, daytime sleeplessness, number of meals per day, appetite alterations in stress, smoking and drinking habits, professional satisfaction and occupational stress). Various groups were structured according to the answers given to the survey form, and then they were analyzed regarding the HPLP II questionnaire scores.

Results: A total of 296 participants were enrolled. The average HPLP II total score of healthcare workers was 121.29 ± 20.88. Participants obtained the highest score from the spiritual growth dimension of the HPLP II questionnaire and the lowest score from the physical activity dimension. Our results show that those with better socio-economic status, better sleep quality, a meal count of 3 or more, a sleep duration of 7 hours or more, and job satisfaction present better health-promoting lifestyle behaviors.

Conclusion: Considering their role in promoting public health, it is important to improve healthcare professionals' awareness. The data obtained during this current study are expected to make a valuable contribution and guide health policymakers in adapting their interventions.

Keywords: Health, lifestyle, medical staff, promotion of health, healthy lifestyle

INTRODUCTION

The definition and meaning of health have changed throughout history.[1] In 1948, the World Health Organization (WHO) expressed that health is not only the absence of disease, and discomfort but also a state of social, mental, and physical well-being.[2] Later, it was stated that since WHO's definition of health has limited aspects, health should be redefined to include concepts such as quantity, quality, and spirituality.[3] Today's understanding of health envisages a holistic care approach with health at its center, which ensures, develops, and protects the continuity of health of the society, family, and individual.[4]

In terms of the holistic approach, the behavior of protecting and promoting health has been considered an integral part of a healthy lifestyle. Improving the health status in our society and providing primary health care services are the main strategies for health promotion.[5] As Pender stated, one of the components that define a healthy lifestyle is health-protective behavior, while the other is health-promoting behavior necessary for the individual to increase his or her level of well-being and self-actualization and maintain personal satisfaction.[6] According to Pender's model, Healthy Lifestyle Behaviors II (HPLP II) consists of a total scale and six sub-scales coming together to measure behaviors in the theoretical dimensions of a health-

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

promoting lifestyle, including nutrition, physical activity, health responsibility, interpersonal relationships, spiritual growth and stress management.[7]

Lifestyle behaviors influenced by social and environmental factors are the daily routine practices that directly affect the frequency of chronic diseases.[8] Behaviors like using alcohol, cigarettes, and addictive substances that threaten health, inadequate and unbalanced nutrition, and insufficient physical activity are responsible for most of the diseases and deaths.[9] Therefore, health services need to be developed in a way that prevent diseases and encourage HPLP rather than an acute treatment approach.[10] To prevent diseases, a health-promoting lifestyle is needed, defined as spontaneous, versatile behavioral habits that enable individuals to realize themselves to improve health and quality of life.[11] Therefore, protective, preventive, and individualized medicine to be applied in primary care should be cost-effective, affordable, and comprehensive. In this way, healthcare services should be implemented with a holistic approach, allowing healthcare professionals to recognize and understand the health-related behaviors of their patients and their families.[12] Sometimes, healthcare professionals prioritize ensuring the well-being of their patients over maintaining their own health because of factors such as low motivation to work, fatigue, inadequate knowledge about promoting a healthy lifestyle obtained during training, and lack of time.[13] It has been shown that healthcare professionals who engage in and exhibit healthy behaviors are more likely to provide preventive counseling and have higher self-efficacy and confidence while motivating their patients to avoid health-risk behaviors.[14] The health-related habits of healthcare professionals, who are expected to be role models, also influence the lifestyle attitudes of their patients.[13] Developing skilled, motivated, and supported healthcare workers is essential to overcoming obstacles in achieving national and global health goals because the workforce is central to advancing health in every health system.[15] This investigation aimed to analyze the healthy lifestyle behaviours of healthcare professionals by using social-demographic factors, occupation, living status, health, and habit-related factors obtained from the 23-question survey form. These factors were compared in terms of the HPLP II questionnaire scores.

MAIN POINTS

- The healthcare workers were studied using a 23-item socio-demographic questionnaire and analyzed for the Health Promoting Lifestyle Profile II (HPLP II) scores.

- Although our study results reveal that health-promoting behaviors of healthcare workers are at a moderate level, highest mean score was obtained from spiritual growth followed by interpersonal relations, while the lowest mean score was obtained from physical activity followed by stress management in terms of six dimensions of the HPLP II questionnaire.

- No significant relationship between body mass index, occupational groups as healthcare workers, weekly working hours, working styles, appetite changes under stress and total HPLP II scores or its six dimensions scores have been shown in this research.

MATERIAL AND METHODS

Study Design

This study was approved by the Medical Ethics Committee of Kafkas University (approval no.: 80576354-050-99/138, date: 23.09.2022, Session 7). This cross-sectional study was conducted between September 2022 and March 2023 at Kafkas University Health Research and Application Hospital after obtaining ethical approval. Study data were collected by asking participants, who could be reached individually, to read the printed forms and mark the answers. Participants who could not be reached individually were asked to fill out the forms presented online using the Google Forms platform. A survey form, which questions the sociodemographic characteristics, individual characteristics, and working conditions of healthcare workers, along with the Health-Promoting Lifestyle Profile II (HPLP II) questionnaire, were used to collect data. An anonymous survey was conducted with each participant's informed consent, both electronic and printed, consent, and the questionnaires were self-administered.

Our inclusion criteria were: 1- Working as a full-time healthcare worker at Kafkas University Faculty of Medicine Health, Research and Application Hospital; 2- Being over 18 years old; 3- Voluntarily requesting to participate in the study after being informed; 4- Filling out the questionnaires completely. Our exclusion criteria were: 1. Not being a full-time healthcare worker at Kafkas University Faculty of Medicine Health, Research and Application Hospital, 2. Not agreeing to participate in the study after being informed, and 3. Incomplete completion of questionnaires. The study was completed with a total of 296 valid surveys. Nine of the surveys were not included in the study because they were incompletely filled out.

Measurements and Instruments-Independent Variables

Sociodemographic data were obtained with a 23-question survey form which's content includes gender, age, marital status, body weight and height, occupational group as a healthcare worker, time spent in the profession, weekly working hours, working style, perception of socioeconomic level, living status, perception of health status, presence of chronic disease, having routine health check-ups, sleep duration, perception of sleep quality, daytime sleeplessness, number of meals, experiencing changes in appetite in case of stress, smoking and drinking habits, job satisfaction status and experiencing stress due to occupation. Some of the answers to the survey form questions were evaluated in their original form, while the remaining answers were evaluated by creating categories. Gender was evaluated in two groups: male and female. The ages of the participants were evaluated in 4 groups: 1=18-29 years, 2=30-39 years, 3=40-49 years, and 4= ≥ 50. Marital status was evaluated in two groups: 1= married and 2= single. Using the weight and height data of the participants, body mass index (BMI) was calculated with the formula weight (kg)/ height (m²). The results were grouped based on the WHO's BMI classification, namely: BMI <18.5, underweight; 18.5≤ BMI <24.99, normal weight; 25.0≤ BMI <29.99, overweight (pre-obesity); and BMI ≥30.0, obese.[16] Participants were divided into four groups according to their professional groups: 1=

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

doctor, 2= nurses, 3= technicians, and 4= others (pharmacist, microbiologist, caregiver). Years of experience in the profession were evaluated in two groups: 1= ≤ 10 years, 2= >10 years. Weekly working hours were evaluated in two groups: Group 1: 40 hours and Group 2: more than 40 hours. Working style was evaluated in two groups: 1: permanent regular daytime working hours, and 2: other (permanent night shift, rotational/shift, sometimes being on guard duty in addition to regular daytime working). Perception of the socioeconomic level was evaluated in three groups: 1= low, 2= medium, and 3= high. The living status of the participants was evaluated as two groups: 1= living alone and 2= not living alone. Perception of health status was evaluated in three groups: 1= good, 2= moderate, and 3= poor. The presence of chronic disease was evaluated in two groups: 1= yes (with chronic disease) and 2= no (not with chronic disease). The timing of routine health check-ups was evaluated in three groups: 1= in the last 1 year; 2= more than 1 year ago; 3= never had a check-up. Sleep duration was evaluated in two groups: 1= < 7 hours, 2= ≥ 7 hours. Perception of sleep quality was evaluated in three groups: 1= good, 2= average, and 3= bad. Experiencing daytime sleeplessness was evaluated in two groups: 1= those having daytime sleeplessness, and 2= those without daytime sleeplessness. The daily meals consumed were evaluated in two groups: 1= < 3 meals and 2= ≥ 3 meals. Appetite change due to stress was categorized into three groups: 1= increases, 2= decreases, and 3= stable. The smoking status of the participants was evaluated based on whether they were smokers or non-smokers. The severity of smoking was calculated as packs/year, and the total duration of smoking (in years) was also calculated. The responses were evaluated based on yes and no for alcohol use. Additionally, the stated amount of alcohol consumption was assessed whether the participants had moderate alcohol consumption or high-risk drinking habits. Furthermore, the total alcohol consumption duration in years was evaluated. Professional satisfaction status was evaluated in three groups. 1= dissatisfied, 2= undecided, and 3= satisfied. Occupational stress was evaluated in three groups: 1= never, 2= sometimes, and 3= always.

Measurements and Instruments-Dependent Variables

The original HPLP was developed by Walker et al.[6] in 1987, based on Pender's health promotion model, and in 1996, Walker and Hill-Polerecky[7] developed HPLP II. The HPLP II questionnaire measures health promotion behavior, a multidimensional model of individually created perceptions and activities that help individuals reveal their potential and improve their health level. The questionnaire consists of 52 items and six dimensions, all of which have been designed with a positive approach. Therefore, as the scores obtained from the scale increase, the level of health behavior stated also increases. In this questionnaire, these subscales are stress management (8 items), spiritual growth (9 items), physical activity (8 items), health responsibility (9 items), nutrition (9 items), and interpersonal relations (9 items). Each item is rated on a 4-point Likert-type scale: 1 indicates "never," 2 indicates "sometimes," 3 indicates "often," and 4 indicates "routinely". Evaluation of the health-promoting lifestyle according to its theoretical dimensions, consists of evaluating the total score from the 52 items of HPLP II and calculating the scores of its subscales. The highest total score

that can be obtained for the overall HPLP II Scale is 208, while the lowest score is 52.[7]

Statistical Methods

All statistical calculations were performed using IBM SPSS Statistics for Windows version 22.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics are expressed as number, percentage, mean, standard deviation, median, and min.-max. values. The Shapiro-Wilk test was performed to examine whether the data were normally distributed. Data were analyzed using parametric (Independent Samples t-test or one-way ANOVA,) or nonparametric (Mann-Whitney U test or Kruskal-Wallis variance analysis,) tests, depending on the data distribution. Pearson's r and Spearman's rho correlation tests were used for examining the relationship between two variables, and Bonferroni test was used to determine the source of the difference between groups. The results were evaluated within the 95% confidence interval, and $P < 0.05$ was considered statistically significant.

RESULTS

This study included 296 healthcare workers. According to the results, 52.7% of participants were women, 62.5% were between the ages of 20 and 29, 62.5% were not married, and 82.4% had been working for less than 10 years. Table 1 summarizes the participants' characteristics regarding multiple parameters. Participants' average age was 29.36 ± 6.84, BMI was 24.67 ± 4.48, sleep duration was 7.13 ± 1.30 hours, and their average number of meals was 3.00 ± 1.25 per day. One hundred seven people who stated they were smoking had consumed an average of 7.68 ± 7.87 packs per year of cigarettes for approximately 8.02 ± 5.59 years. Moreover, 61 people who stated that they consumed alcohol less than moderately had been using it for 7.59 ± 7.04 years. Participants' lowest HPLP II total score was 73, the highest HPLP II total score was 186, and the average score was 121.29 ± 20.88. The mean scores from the subscales of the questionnaire, from highest to lowest, were found to be 24.63 ± 4.91 in spiritual growth, 24.20 ± 4.81 in interpersonal relations, 19.80 ± 4.53 in health responsibility, 18.82 ± 4.25 in nutrition, 17.66 ± 3.74 in stress management, and 16.19 ± 5.23 in physical activity (Table 2). Correlations between participants' age, BMI, sleep duration, daily meal number, amount of smoking (pack/year), duration of smoking (years), duration of alcohol consumption (years), and HPLP II scores were presented in Table 3. The participants' physical activity increased in correlation as their age decreased ($\rho \geq 0.147$, Sig.: 0.012). As their daily sleep duration increases, they exhibit higher levels of health responsibility ($r > 0.115$, Sig.: 0.048) and stress management ($r = 0.148$, Sig.: 0.011). Participants with greater daily meal numbers tend to have better eating behavior ($\rho = 0.136$, Sig.: 0.019), and those with more prolonged smoking habits had better interpersonal relationships ($r = 0.192$, Sig.: 0.047). No statistically significant correlation was found between BMI, amount of smoking (pack/year), duration of alcohol consumption (year), and HPLP II scores.

The statistically significant differences between participants' characteristics and HPLP II and its six dimensions are listed in Table 4. It was determined that those aged between 20-

Table 1. Participants' Characteristics

Variable	Cathegory	n	%
Age group (years)	20-29	185	62.5
	30-39	84	28.4
	40-49	22	7.4
	≥ 50	5	1.7
Gender	Female	156	52.7
	Male	140	47.3
Marital status	Married	110	37.2
	Not married	186	62.8
BMI	<18,5 (underweight)	11	3.7
	18.5-24.99 (normal weight)	163	55.1
	25-29.99 (overweight)	92	31.1
	≥ 30 (obese)	30	10.1
Occupational group as a healthcare worker	Doctor	108	36.5
	Nurse	110	37.2
	Technician	46	15.5
	Other	32	10.8
Years of professional experience	≤ 10 years (0-5 years, 5-10 years)	244	82.4
	> 10 years (10-15 years, 15 years and over)	52	17.6
Weekly working hours	40 hours	125	42.2
	> 40 hours (40-50 hours, ≥ 50 hours)	171	57.8
Working style	Regular daytime working	103	34.8
	Other (permanent night shift, rotational/shift, being on guard duty from time to time in addition to regular daytime working)	193	65.2
Perception of socioeconomic level	Low	81	27.4
	Medium	200	67.6
	High	15	5.1
Living status	Living alone	111	37.5
	Not living alone (living with family, living with spouse and children, living only with children, other)	185	62.5
Perception of health status	Good (excellent, very good, good)	186	62.8
	Moderate	91	30.7
	Poor	19	6.4
Chronic desease	Yes	51	17.2
	No	245	82.8
Time of routine health check-up	In the last 1 year	205	69.3
	In more than 1 year (in the last 2 years, in the last 3 years, in the last 4 years or more)	49	16.6
	Never	42	14.2
Sleep duration	< 7 hours	97	32.8
	≥ 7 hours	199	67.2
Perception of sleep quality	Good (very good, good)	109	36.8
	Average	118	39.9
	Bad (bad, very bad)	69	23.3
Daytime sleeplessness	Having daytime sleeplessness (always, often, sometimes, rarely)	285	96.3
	Not having daytime sleeplessness	11	3.7

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

Table 1. Continued

Variable	Category	n	%
Daily number of meals	< 3 meals	58	19.6
	≥ 3	238	80.4
Apetite change due to stress	Increases	114	38.5
	Decreases	147	49.7
	Stable	35	11.8
Smoking status	No	189	63.9
	Yes	107	36.1
Alcohol consumption status	No	235	79.4
	Yes	61	20.6
Professional satisfaction	Dissatisfied (very dissatisfied, dissatisfied)	76	25.7
	Undecided	69	23.3
	Satisfied (satisfied, very satisfied)	151	51.0
Having occupational stress	Never	6	2.0
	Sometimes	175	59.1
	Always	115	38.9

Table 2. Mean, Median, Minimum, Maximum, and Standard Deviation of The HPLP II Scale and Subscales of All Participants

	HPLP II total score	Health responsibility	Physical activity	Nutrition	Spiritual growth	Interpersonal relations	Stress management
n	296	296	296	296	296	296	296
Mean	121.29	19.80	16.19	18.82	24.63	24.20	17.66
Median	121.00	19.00	16.00	19.00	25.00	24.00	17.00
SD* (±)	20.88	4.53	5.23	4.25	4.91	4.81	3.74
Minimum	73	10	8	9	10	11	10
Maximum	186	36	32	32	36	36	27

*SD, standard deviation; HPLP II, Health- Promoting Lifestyle Profile II.

29, compared to those aged between 40-49 ($P = 0.003$), and men, compared to women ($P = 0.001$), exhibited significantly higher physical activity levels. Those with less than 10 years of experience in the profession exhibited higher levels of physical activity ($P = 0.044$) than more experienced healthcare professionals; in addition, the physical activity level of those living alone was significantly higher ($P = 0.013$) than those who do not live alone. Moreover, alcohol users exhibited better physical activity ($P = 0.009$) than non-users.

While the physical activity scores of single people were found to be higher than those of married people ($P = 0.002$), married people had higher spiritual growth scores ($P = 0.045$) than single people.

HPLP II total score ($P = 0.022$) and spiritual development score ($P = 0.030$) of those who stated their socio-economic status as high were significantly higher than those who reported their socioeconomic status as low. Both high and medium socioeconomic levels are more successful in terms of health responsibility ($P = 0.004$). On the other hand, stress management of individuals with low socioeconomic levels was more successful ($P = 0.048$) than that of individuals with higher socioeconomic levels. The stress management behaviors of the participants with good health were better ($P = 0.025$) than

those with moderate health, and the individuals with chronic disease were more successful in interpersonal relations ($P = 0.041$) than those who did not have a chronic disease. The nutrition subscale score was found to be significantly higher ($P = 0.012$) for those who had a routine health check-up both within the last year and more than a year ago those who had never gone for a routine health check-up.

It was determined that healthcare workers with a daily sleep duration of 7 hours or more were more successful in interpersonal relations ($P = 0.027$) and stress management ($P = 0.010$) than those who slept less than 7 hours. Regarding HPLP II total ($P < 0.001$), health responsibility ($P < 0.001$), nutrition ($P = 0.005$), spiritual development ($P = 0.004$), and stress management ($P < 0.001$), the scores obtained from the scale by healthcare professionals who have good sleep quality were found to be higher than those whose sleep quality was average or poor. Participants with good sleep quality exhibited higher levels of physical activity ($P < 0.001$) than those with average sleep quality. Additionally, individuals with high sleep quality were more successful in interpersonal relations ($P = 0.044$) than those with poor sleep quality. Healthcare workers who do not have sleeplessness during the day indicated higher levels of healthy lifestyle behavior in health responsibility ($P = 0.039$),

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

stress management (P = 0.038), and nutrition (P = 0.005) compared to those who experienced daytime sleeplessness. The study population who consumed 3 or more meals daily had significantly higher scores on the nutrition (P = 0.004) and stress management (P =0.006) subscales than healthcare workers who consumed less than 3 meals. Healthcare workers who are satisfied with their professions have significantly higher scores in The HPLP II total score (P = 0.010), interpersonal relations score (P = 0.001), and stress management score (P = 0.016) compared to those who are dissatisfied. The participants who were satisfied with their profession had higher scores in the spiritual growth subscale (P < 0.001) than those who were undecided and those who were dissatisfied with their professions. Healthcare professionals who sometimes experience stress due to their professions have been found to have better stress management (P = 0.006) than those who always experience occupational stress.

There were no significant relationships between occupational groups, such as healthcare professionals, weekly working hours, working styles, changes in appetite under stress, smoking status, amount of smoking (pack/year), duration of alcohol use (years), and the HPLP II scores.

DISCUSSION

The aim of this study is to identify the level of health-promoting lifestyle behaviors among healthcare professionals. Moreover, we aimed to determine how sociodemographic factors related to individual and working life affect these lifestyle behaviors. While the total score obtained from the HPLP II questionnaire varies between 52 and 208, the average total score of 121.29 ± 20.88 obtained in this study indicates a medium-level health-promoting lifestyle. Our result was consistent with the outcomes of these studies, which found the average total score at a medium level. In addition, the result we presented is similar to studies conducted using the same scale with healthcare professionals in different countries, where the average score was found to be at a medium level of 131 ± 23,[17] 139.82 ± 21.27.[18] and 122.42 ± 44.22.[19] Healthcare professionals with sufficient knowledge about health-promoting behaviors and their effects on health, and who encounter patients with chronic diseases every day due to the patients' health-risking habits, are expected to have a higher level of healthy lifestyle behavior.[13] However, in our study, the average HPLP II total score of healthcare workers does not meet this expectation. Although research supports that having adequate knowledge can affect attitudes toward health, this does not necessarily

Table 3. Correlation Between Participants' Age, BMI, Sleep Duration, Daily Meal Number, Amount of Smoking (Pack/Year), Duration of Smoking (years), Duration of Alcohol Consumption (Years) and Healthy Lifestyle Behaviors II Scores

Variable		HPLP II total score	Health responsibility	Physical activity	Nutrition	Spiritual growth	Interpersonal relations	Stress management
Age	ρ*	-0.024	-0.059	-0.147	0.088	0.099	-0.044	-0.050
	Sig.**	0.680	0.308	0.012	0.130	0.090	0.446	0.391
BMI**	ρ*	0.061	0.014	0.020	0.042	0.072	0.084	0.047
	Sig.**	0.293	0.810	0.726	0.467	0.220	0.149	0.418
Sleep duration	r***	0.044	0.115	-0.059	0.026	-0.035	0.046	0.148
	Sig.**	0.447	0.048	0.309	0.656	0.552	0.433	0.011
Number of meals	ρ*	0.093	0.078	0.083	0.136	0.039	0.024	0.086
	Sig.**	0.111	0.179	0.153	0.019	0,509	0.685	0.138
Smoking amount (pack/year)	ρ*	-0.008	-0.131	-0.129	-0.064	0.151	0.141	-0.002
	Sig.**	0.935	0.180	0.184	0.512	0.120	0.147	0.981
Smoking duration (years)	r***	-0.004	-0.137	-0.189	-0.029	0.185	0.192	-0.018
	Sig.**.	0.966	0.159	0.052	0.763	0.056	0.047	0.850
Alcohol consumption duration (years)	ρ*	-0.009	-0.133	-0.064	0.089	0.135	0.024	-0.055
	Sig.**	0.943	0.308	0.622	0.494	0.299	0.856	0.675

*ρ, Spearman's rank correlation coefficient
**Sig., significance level (P) (2-tailed)
***r, Pearson correlation coefficient
****BMI, body mass index; HPLP II, Health- Promoting Lifestyle Profile II.

Table 4. Statistical Relationship Between Participants' Characteristics and HPLP II and Its Six Dimensions

Variable		n	Mean	Standart deviation (±)	P
HPLP II total score		n	Mean	Standart deviation (±)	P
Socioeconomic level	Low	81	118.06	23.23	**P*: 0.022**
	Medium	200	121.64	19.51	
	High	15	134.20	21.19	
Sleep quality	Good	109	128.56	20.84	**P**: ≤ 0.001**
	Average	118	117.39	18.74	
	Bad	69	116.49	21.49	
Professional satisfaction	Dissatisfied	76	116.20	20.05	**P**: 0.010**
	Undecided	69	119.48	22.76	
	Satisfied	151	124.69	19.87	
Health responsibility		n	Mean	Standart deviation (±)	P
Socioeconomic level	Low	81	18.93	4.82	**P*: 0.004**
	Medium	200	19.97	4.36	
	High	15	22.27	4.30	
Sleep quality	Good	109	21.15	4.79	**P**: ≤ 0.001**
	Average	118	19.08	4.28	
	Bad	69	18.90	4.07	
Daytime sleeplessness	Yes	285	19.72	4.55	**P****: 0.039**
	No	11	22.00	3.49	
Physical activity		n	Mean	Standart deviation (±)	P
Age group (years)	20-29 years	185	16.89	5.00	**P*: 0.003**
	30-39 years	84	15.32	5.68	
	40-49 years	22	13.32	4.04	
	≥ 50 years	5	17.60	4.82	
Sleep quality	Good	109	17.53	4.94	**P**: ≤ 0.001**
	Average	118	14.84	4.94	
	Bad	69	16.38	5.62	
Gender	Female	156	15.25	4.724	**P***: 0.001**
	Male	140	17.24	5.577	
Marital status	Married	110	14.98	5.01	**P***: 0.002**
	Single	186	16.90	5.23	
Years of experience	≤ 10 years	244	16.47	5.15	**P***: 0.044**
	> 10 years	52	14.87	5.44	
Living status	Living alone	111	17.16	4.88	**P***: 0.013**
	Nnot living alone	185	15.61	5.35	
Alcohol consumption	No	235	15.79	5.14	**P***: 0.009**
	Yes	61	17.74	5.32	
Nutrition		n	Mean	Standart deviation (±)	P
Time of routine health check-ups	In the last 1 year	205	19.12	4.27	**P**: 0.012**
	In more than 1 year	49	19.14	4.03	
	Never	42	17.02	4.09	
Sleep quality	Good	109	19.87	4.04	**P**: 0.005**
	Average	118	18.15	4.39	
	Bad	69	18.32	4.08	
Daily number of meals	< 3 meals	58	17.40	4.495	**P***: 0.004**
	≥ 3 meals	238	19.17	4.135	

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93–103

Table 4. Continued

Variable		n	Mean	Standart deviation (±)	P
HPLP II total score		n	Mean	Standart deviation (±)	P
Daytime sleeplessness	Yes	285	18.71	4.27	P****: 0,005
	No	11	21.73	2.49	
Spiritual growth		n	Mean	Standart deviation (±)	P
Socioeconomic level	Low	81	23.64	5.82	P*: 0,030
	Medium	200	24.83	4.46	
	High	15	27.27	4.20	
Sleep quality	Good	109	25.85	4.87	P**: 0,004
	Average	118	24.01	4.36	
	Bad	69	23.75	5.49	
Professional satisfaction	Dissatisfied	76	23.07	4.85	P**: ≤ 0,001
	Undecided	69	23.97	4.95	
	Satisfied	151	25.72	4.67	
Interpersonal relations		n	Mean	Standart deviation (±)	P
Sleep quality	Good	109	24.87	4.98	P**: 0,044
	Average	118	24.25	4.43	
	Bad	69	23.03	5.02	
Professional satisfaction	Dissatisfied	76	22.50	4.49	P**: 0,001
	Undecided	69	24.20	5.10	
	Satisfied	151	25.05	4.63	
Chronic disease	Yes	245	23.93	4.70	P***: 0,041
	No	51	25.45	5.15	
Sleep duration	< 7 hours	97	23.31	4.53	P***: 0,027
	≥ 7 hours	199	24.63	4.89	
Stress management		n	Mean	Standart deviation (±)	P
Socioeconomic level	Low	81	17.30	4.22	P*: 0,048
	Medium	200	17.65	3.49	
	High	15	19.73	3.73	
Health status	Good	186	18.05	3.54	P*: 0,025
	Moderate	91	16.95	3.62	
	Poor	19	17.1	5.47	
Having occupational stress	Never	6	18.50	5.95	P*: 0,006
	Sometimes	175	18.17	3.66	
	Always	115	16.83	3.61	
Sleep quality	Good	109	19.28	3.52	P**: ≤ 0,001
	Average	118	17.05	3.34	
	Bad	69	16.12	3.80	
Professional satisfaction	Dissatisfied	76	16.84	3.32	P**: 0,016
	Undecided	69	17.25	4.31	
	Satisfied	151	18.25	3.57	
Sleep duration	< 7 hours	97	16.86	3.68	P***: 0,010
	≥ 7 hours	199	18.05	3.71	
Daily number of meals	< 3 meals	58	16.45	3.560	P***: 0,006
	≥ 3 meals	238	17.95	3.732	
Daytime sleeplessness	Yes	285	17.57	3.74	P****: 0,038
	No	11	19.82	3.06	

P*, Kruskal-Wallis test
P**, One-way ANOVA
P***, Independent Sample t-test
P****, Mann-Whitney U test; HPLP II, Health- Promoting Lifestyle Profile II.

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

mean that awareness will lead to correct health behaviors and habits.[20] because participants' different sociodemographic characteristics, health conditions, and work environments affect these behaviors.[13]

Considering the six dimensions of the questionnaire, the highest average score received by the participants was in spiritual growth, however, the lowest average score was obtained from physical activity. Similar results have been encountered in some studies in the literature,[17,18,21] where the highest score was spiritual growth, and the lowest score was physical activity. There are other studies conducted with healthcare professionals, such as Mustafaei Najaf-Abadi and Rezaei's[19] study. Their highest score was in health responsibility, followed by spiritual development. The lowest was in stress management, followed by physical activity.[19] Cho and Han's[22] study indicated that interpersonal relations had the highest score, and the lowest score was in physical activity. Kurnat-Thoma et al.'s[23] highest score was in interpersonal relations, and the lowest score was in health responsibility. While Tsai and Liu's[24] highest score was in interpersonal relations, the lowest score was in physical activity. Even though some studies have reached entirely different results from ours, we saw that the results of most of these studies were consistent with this study. Spiritual growth involves the ability to gain the life experience of individuals who develop themselves, and they change positively to maximize their efforts to live a healthy life. Spiritual growth enables individuals to analyze the meaning and consequences of their traumatic experiences, allowing them to increase mental maturation and self-efficacy.[25] Given that healthcare workers received the lowest score for physical activity, this might result from longer shifts and tiredness due to their heavy workload.[13] Therefore, reducing obstacles such as lack of time, excessive fatigue, shift work, and lack of resources is important to support the engagement in physical activity.[18]

This study indicated that physical activity levels decrease with aging. According to the study results, those between the ages of 20-29 showed significantly higher levels of physical activity compared with the 40-49 age group, and the physical activity scores of those with 10 years or less of professional experience were higher than those with more than 10 years. There were other findings related to sociodemographic status of the participants. Our statistical analysis found that men scored significantly higher than women in physical activity. In addition, physical activity levels decrease with aging. Moreover, the physical activity score of those living alone was significantly higher than that of those who did not live alone. According to this study's results, the total HPLP II and spiritual growth scores of individuals with high socioeconomic levels were higher than the scores of those with low socioeconomic levels among our participants. There was a significant positive, low-level correlation between the number of meals our participants consumed and nutritional intake in this study. This study showed a statistically significant, positive yet very low correlation between health responsibility, stress management scores, and daily sleep duration. Unlike the known adverse effects of smoking on health, there was no relationship between either smoking status or the amount of smoking (packs/year) and HPLP II scores in the current investigation.

Based on the well-known adverse effects of alcohol consumption on health, this current investigation unexpectedly revealed that the physical activity score of alcohol users was higher than that of non-users, and the duration of alcohol consumption did not have a significant relationship with HPLP II. The amount of alcohol consumption reported by the participants was less than moderate, and they were mainly young individuals (with an average age of 29.93 ± 8.77). Therefore, the alcohol-consuming participants' low-level drinking habits and average age, which is considerably younger, might play a role in this outcome. The current study's findings were similar to the literature, in that the scores of those who were satisfied with their profession were significantly higher in HPLP II total, interpersonal relations, and stress management than those of the individuals who were dissatisfied.

Considering the previous studies on marital status and HPLP II, various relationships have been reported. Moghimi et al.[17] reported that married people have better nutrition and experience spiritual growth. Some researchers stated that single people have low nutritional scores.[21] Married people have been reported to have lower HPLP II scores.[26] In another study by Mustafaei Najaf-Abadi and Rezaei[19], no significant relationship between marital status and HPLP II scores was found. In this study, the physical activity scores of singles were significantly higher than those of married people, and the spiritual growth scores of married people were significantly higher than those of singles. This current study showed a statistically significant, positive yet very low correlation between health responsibility, stress management scores, and daily sleep duration. The participants who slept 7 hours or more daily had significantly higher average interpersonal relations and stress management scores than those who slept less than 7 hours. In the study by Itani et al.,[27] the dose-response of short sleep duration in mortality was examined, finding that there was a linear relationship between a statistically significant increase in mortality and sleep duration under 6 hours. Hirshkowitz et al.'s[28] study evaluated the sleep duration recommended by the American National Sleep Foundation. In this systematic review, the acceptable duration for adults was concluded to be between 7 and 9 hours. These findings seem to support our conclusion. Moreover, the results of this current study indicated that the scores of participants with good sleep quality were significantly higher for physical activity than participants with medium sleep quality. For the interpersonal relations subscale, individuals with good sleep quality had higher scores on the subscale than those with poor sleep quality. Previous studies conducted with healthcare professionals reported that the higher the job stress, the poorer the health promotion behaviors, conversely, the lower the job stress, the better the health promotion behaviors.[26] Additionally, the more spiritual development scores increase, the more work stress decreases significantly.[29] The emergence of work stress may result from the person not having sufficient knowledge and skills to cope with the situations in the work environment. If it continues, it has the effect of worsening the balance between the person's abilities and job demands.[30] Considering that one of the most important factors of burnout is occupational stress,[31] working without stress can be associated with a healthy lifestyle, just

as being under stress at work is associated with an unhealthy lifestyle.[19] The current study concluded that the stress management scores of the participants who stated that they sometimes experienced occupational stress were significantly higher than those who stated that they always experienced occupational stress.

According to this the results of the current study conducted with the HPLP II survey, which we chose due to its benefits in assessing self-maintained health care behaviors in daily life, clearly demonstrate the need for specific health intervention. Since the study group consists of healthcare professionals, it is worrying that the HPLP II total score is at a medium level and the least successful health behavior in the overall evaluation is physical activity. We think that it is necessary to provide sports facilities and organize access to them, reduce the workload to provide sufficient time, and organize events that promote the health benefits of regular physical activity to support the population, especially, the elderly, women, married people, as well as those not living alone and who are not physically active in their lives. In addition, those who sleep an average of 7 hours or more can cope with stressors better. Moreover, those with good sleep quality performed significantly better in both the HPLP II total score and all six dimensions. As the authors of the current study, we think that educational interventions that encourage the development of sleep duration and sleep quality among healthcare professionals will support the development of health-promoting behaviors.

There were various subheadings studied in this investigation, and among them, some showed no statistical relationship with healthy lifestyle behaviours regarding the HPLP II questionnaire. No significant relationship between BMI, occupational groups of healthcare workers, weekly working hours, working styles, appetite changes under stress and total HPLP II scores or its six dimensions' scores has been shown in this research.

Study Limitations

This study has some limitations to discuss before interpreting the results of the investigation. Although this study highlights and clarifies the necessity of health-promoting behaviors, the cross-sectional design makes it difficult to interpret the causal relationships and time-dependent changes in the lifestyle patterns of healthcare professionals. Since the participants of our single-center study were selected from a university hospital, our findings may not represent community employees due to differences in the working environment and conditions. The sample size is another aspect to discuss since these results will not represent all healthcare professionals, and caution should be used when generalizing them to foreign countries, considering cultural differences. All data collected for the study consist of self-reported responses; it is possible that individuals may have reported fewer negative behaviors or vice versa due to social acceptance bias, and these responses may not reflect the truth. To reduce this bias, future studies examining life behaviors aimed at improving health should be designed as multicenter studies, with a larger sample group and using measurements as objective as possible.

CONCLUSION

In this cross-sectional study, we aimed to identify the factors affecting the health-promoting lifestyle behaviors of healthcare professionals. Although our study results reveal that health-promoting behaviors of healthcare workers are at a moderate level, we should also point out that, in terms of six dimensions, the highest mean score was obtained from spiritual growth, while the lowest mean score was obtained from physical activity. A significant relationship between the factors we examined, such as gender, age, marital status, time spent in the profession, socioeconomic level, living status, health status, chronic disease, routine health check-up, daily sleep duration, sleep quality, daytime sleeplessness, number of meals, alcohol use, professional satisfaction, occupational stress, and health-promoting lifestyle behaviors, has been indicated in this research. However, no significant relationship has been reached between BMI, occupational group, specifically as healthcare workers, weekly working hours, working style, appetite change under stress, smoking status, amount of smoking (pack/year), duration of alcohol use (years), and health-promoting life behaviors. Based on these findings, and considering the role of healthcare workers in providing health services, education, promoting public health, it is important to improve their lifestyle behaviors regarding physical activity, where they score the lowest. We advocate that multi-center studies should be conducted with larger sample groups and improved methodologies to increase the awareness of those serving in the health sector regarding health promotion. Additionally, these studies aim to reveal the reasons for the differences between the results of studies in the literature. These types of studies and meta-analyses that evaluate the cumulative data of these studies will provide essential data to guide health policymakers in adapting interventions for these professional groups and public health.

Ethics

Ethics Committee Approval: This study was approved by the Medical Ethics Committee of Kafkas University (approval no.: 80576354-050-99/138, date: 23.09.2022, Session 7).

Informed Consent: An anonymous survey was conducted with each participant's informed consent, both electronic and printed, consent, and the questionnaires were self-administered.

Footnotes

Author Contributions

Concept - B.K., H.Ç.; Design - B.K.; Literature search - B.K.; Supervision - H.Ç.; Data collection - B.K.; Materials - B.K.; Data Interpretation - B.K., H.Ç.; Statistical analysis - B.K.; Manuscript prepeation - B.K., H.Ç.; Critical Review - B.K., H.Ç.

Kızılgöz and Çakmur. Healthy Lifestyle Behaviours of Healthcare Workers

Arch Basic Clin Res 2025;7(2):93-103

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