

ORIGINAL RESEARCH

Effects of Occupational Health and Safety on Healthy Lifestyle Behaviors of Workers Employed in a Private Company in Turkey

Nilgun Ulutasdemir, PhD, Meryem Kilic, MSc, Özge Zeki, MSc, Fatma Begendi

Gaziantep and Kilis, Turkey

Abstract

BACKGROUND It has been suggested that inappropriate working conditions and unsafe environments at construction sites, longer working hours, and inadequate workplaces adversely affect the health behaviors of workers.

OBJECTIVE The aim of this study was to evaluate the effect of occupational health and safety (OHS) practices on healthy lifestyle behaviors of workers employed at a construction site of a private company in Gaziantep, Turkey.

METHODS The sampling size of this descriptive study consisted of 400 employees working at the construction site between December 2014 and January 2015. In all, 341 employees still working or participating in the study during the period of this questionnaire study were included in the sampling. Data from the survey were derived from responses to questions regarding sociodemographic characteristics, OHS applications, health state, and working conditions, as well as to the questions in on the Healthy Lifestyle Behaviors Scale (HLBS), under direct surveillance.

FINDINGS Male workers with a mean age of 30.61 ± 8.68 years constituted the study population. Of the workers, 41.9% had a primary school education. The majority received professional and OHS training (65.7% and 79.2%, respectively). Although 83.9% reported using personal protective equipment (PPE), only 2.1% said they had experienced an occupational accident. Total mean score of HLBS scale was 116.91 ± 25.62 points. Workers who had positive thoughts about their jobs demonstrated healthy lifestyle behaviors ($P = .0001$). A positive direct correlation was detected between the training the workers received and the use of PPE ($P = .0001$). In all, 38.1% of the workers reported experiencing work stress at the time of the study. Mean HLBS scores of those experiencing work stress were lower than the scores for workers not experiencing stress ($P < .05$).

CONCLUSION Receiving OHS and professional training and using of PPE favorably affect healthy lifestyle behaviors.

KEY WORDS healthy lifestyle, occupational health and safety, workers, work stress

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INTRODUCTION

Healthiness is not only refraining from diseases, it is also physical, mental, and social well-being

according to the World Health Organization (WHO). Leading a healthy lifestyle decreases possibility of contracting a serious disease or risk for premature death. It is important to adopt healthy

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From the Zirve University Faculty of Health Sciences, Department of Public Health, Gaziantep, Turkey (NU); Kilis 7 Aralık University Vocational School of Health Services, Department of First and Emergency Aid, Kilis, Turkey (MK); Zirve University Faculty of Health Sciences, Department of Psychiatry, Gaziantep, Turkey (ÖZ); Gaziantep University Hospital of Medical Faculty, Department of Eye Diseases, Gaziantep, Turkey (FB). Address correspondence to N.U. (nilgun.ulutasdemir@zirve.edu.tr).

lifestyle behaviors in every phase of life, especially in workplaces where most of one's daily life is spent. Occupational health with a fundamental approach of preventive medicine is a field where activities aiming at definition of health problems and protection of workers' health during work life take place.^{1,2} According to the WHO, promoting healthy behaviors in the workplace creates a safe and healthy work environment; increases self-confidence, moral force, job satisfaction, and health protection skills; and decreases stress. For the company, properly managed health and safety programs are created with a favorable and attentive outlook. These programs can lead to increased productivity, while they decrease absenteeism, health expenditures, penalties, and a number of litigations.³

For the protection of health, beneficial and deleterious factors that affect health should be recognized. For the determination of the state of workers' health and to evaluate healthy behaviors, factors that affect the working environment as well as specific demographic characteristics (age, sex, health state, genetic disposition) should be considered.^{1,4}

Healthy behaviors and the factors that affect them were analyzed and inadequate activity levels, insufficient nutritional behaviors, increased use of tobacco products and alcohol consumption, and higher incidences of obesity were observed. As influential factors, sociodemographic characteristics such as advanced age, being divorced or single, and female gender were determined. Unfavorable working conditions such as longer working hours, type of occupation, lack of good physical workplace conditions, and unemployment were indicated as adverse factors on health behaviors.³ Although levels of healthy behaviors of the individuals employed in various lines of work demonstrate differences, the factors affecting health behaviors show similarities.³ Companies generally promote healthy living to their employees by means of decreasing health expenditures and increasing productivity. However, attitudes of workers concerning health and workplaces have not been evaluated.⁵

Most of the workers in one study reported that programs aimed at improving healthy lifestyle are valuable and that these kinds of programs would increase productivity and support their own healthy lifestyle behaviors.⁵ Workers who improve their own healthy lifestyle will decrease their health expenditures and, in all of these conditions, the workers will perform a key role.⁶ Workers who develop a healthy lifestyle are living less stressful lives and have less work-life balance problems. It

is important to take environmental factors into consideration by assessing the job satisfaction level of the workers annually, controlling health risks, and happy life to create a healthy culture. Programs should be continuously improved and workplace politics and a holistic atmosphere should be created to reinforce workers' health and implementation of many helpful comprehensive programs. Use of these kinds of programs and development of healthy lifestyle of workers will be a beneficial investment for employers and employees.^{5,7}

It has been indicated in the literature that in health improvement programs where workers have gained favorable behaviors concerning nutrition, physical activity, and smoking cessation, the employees lost weight, rates of regular physical activity and smoking cessation increased, whereas incidence of absenteeism decreased, leading to an increase in productivity.⁸ Knowledge about the health behaviors of workers and effective factors while planning improvement programs will increase success rates. At the same time, it will be possible to contribute favorably to the well-being, job satisfaction, and quality of life of the workers.^{9,10}

It has been suggested that inappropriate working conditions and unsafe environments at construction sites, longer working hours, and inadequate workplaces adversely affect the health behaviors of workers. Therefore, the aim of the present study was to evaluate the effect of occupational health and safety (OHS) practices on healthy lifestyle behaviors of workers employed at a construction site of a private company in Gaziantep, Turkey.

MATERIALS AND METHODS

The sample size of this descriptive study consisted of 400 employees working at the construction site between December 2014 and January 2015. In all, 341 employees still working or participating in the study during the period of this questionnaire study were included in the sampling. Approvals from the Ethics Committee and the company were obtained. The surveys were distributed to the workers and conducted after giving them the preliminary information and obtaining their verbal consents in a room where they were together during hours of rest. Data from the study were derived from responses to questions regarding sociodemographic characteristics (age, sex, marital status, economic condition, and educational level), OHS applications (professional education, OHS training, use of personal protective equipment [PPE]), health state (nutrition,

exercise, rest, chronic disease, sleeping, use of tobacco products and alcoholic beverages, medical checkups), working conditions (duration of service, work hours, productivity), and to the questions on the Healthy Lifestyle Behaviors Scale (HLBS) under direct surveillance.

The HLBS was developed in 1987. Validity and reliability study of the scale for Turkish people was performed by Esin.⁴ This Likert-type scale contains 48 positive items and 4 graded subscales. Additionally, the scale has 6 subscales. Its subscales included self-realization, health responsibility, exercise, nutrition, interpersonal support, and stress management. Each subscale can be used independently by itself. Total score of the scale gives the score of healthy lifestyle behaviors. Scores obtained measure individual's health-promoting behaviors related to his or her healthy lifestyle. Higher scores obtained on the scale indicate that the individual applies healthy lifestyle behaviors at a high level. As stated previously, scoring of the responses was done on a 4-item Likert scale as follows: 1 = never; 2 = sometimes; 3 = frequently; and 4 = regularly. For the whole scale, the lowest and highest scores were 48 and 192 points, respectively.³

Statistical analyses. Data were analyzed using the IBM Statistical Package for Social Sciences v22 (SPSS Inc., Chicago, IL, USA). Parametric tests were applied to data of normal distribution and nonparametric tests were applied to data of questionably normal distribution. Data were expressed as mean \pm SD or median (interquartile range), as appropriate. All differences associated with a chance probability of .05 or less were considered statistically significant.

RESULTS

Men (N = 332) with a mean age of 30.61 ± 8.68 (range, 18–65) years constituted 97.4% of the study population. Workers were mostly married (65.4%, n = 223) and 61.9% had at least 1 child. More than half of the (59.8%) workers enrolled in the study had a medium economic status and 41.9% had received only primary education. The majority received professional and OHS training (65.7% and 79.2%, respectively). Although 83.9% used PPE, only 2.1% of the workers reported experiencing an occupational accident. The workers indicated that they had not had any job stress and 73.6% of them had not thought of leaving their jobs. Still, 70.4% had ranked their level of productivity as being sufficient and 43.1% indicated they had

hope for the future. In all, 51.9% (177) described their health status as “perfect,” but 56.3% (192) had not undergone a medical checkup regularly. Of the workers, 53.2% (181) could access health care services and 95.6% (326) reported not having any chronic diseases. Distribution of HLBS scores based on demographic characteristics of the workers are shown in Table 1. The effect of demographic data on HLBS was investigated, and there was no statistically significant relationship between the sex, marital status, status of having a child, economical status, and educational status and HLBS ($P > .05$; Table 1). In the partial correlation analyses in which we eliminated the effect of other variables, we detected that the association between HLBS and demographic features was negative but statistically insignificant ($P > .05$).

Distribution of OHS data and mean HLBS scores are given in Table 2. Mean HLBS scores of the workers who received professional training, used PPE, or both and had not had any occupational accidents were higher without any significance ($P > .05$). Additionally, mean HLBS scores of the workers who received OHS training were found to be higher than those who did not ($P = .050$; Table 2).

Data concerning working life and distribution of HLBS scores are given in Table 3. Workers who were not exposed to stressful occupational events and found their levels of productivity satisfactory had higher mean HLBS scores without any statistical significance ($P > .05$). Workers who had positive thoughts about their jobs demonstrated healthy lifestyle behaviors ($P = .0001$). Mean period of service and working hours were determined as 67.03 ± 72.76 days and 8.49 ± 1.34 hours, respectively. Negative correlations between work stress related to the type of work and HLBS and positive correlations between workers' thoughts about the level of their productivity and the future of their jobs were detected (Table 3).

Data concerning workers' state of health and distribution of their HLBS scores are given in Table 4. The workers who underwent regular checkups (such as physical examination, blood work, chest x-ray, electrocardiogram, etc.) and accessed into health care services easily and employees who thought to consume balanced diet had higher mean HLBS scores ($P > .05$; Table 4).

Correlations between HLBS scores and OHS applications are presented in Table 5. A weakly negative direct correlation was detected between workers' HLBS and professional and OHS training they

Table 1. Distribution of HLBS Scores Based on Demographic Characteristics of the Workers

Demographic Variables	Mean ± SD (Min-Max)				
Age	30.61 ± 8.68 (18-65)				
Number of children	1.89 ± 1.93 (0-9)				
	n (%)	HLBS Score (Mean ± SD)	t value	F value	P value
Sex			-0.655		.713
Male	332 (97.4)	116.76 ± 25.51			
Female	9 (2.6)	122.44 ± 30.78			
Marital status				1.526	.219
Single	102 (29.9)	114.21 ± 28.43			
Divorced/separated	16 (4.7)	110.68 ± 29.34			
Married	223 (65.4)	118.60 ± 23.89			
Having children			1.972		.397
Yes	211 (61.9)	119.05 ± 24.02			
No	130 (38.1)	113.44 ± 27.78			
Socioeconomic status				1.637	.196
Low	126 (37)	114.51 ± 26.17			
Medium	204 (59.8)	118.82 ± 25.46			
High	11 (3.2)	109.09 ± 19.67			
Educational status				0.662	.652
Literate	21 (6.2)	115.23 ± 28.02			
Primary school	143 (41.9)	117.63 ± 23.99			
Secondary school	115 (33.7)	116.42 ± 26.99			
High school	36 (10.6)	120.63 ± 29.84			
Associate's degree	14 (4.1)	116.21 ± 20.39			
Undergraduate education	12 (3.5)	105.66 ± 18.94			

HLBS, Healthy Lifestyle Behaviors Scale

received and the PPEs they used ($P = .004$, $P = .003$, $P = .022$; Table 5). In the partial correlation analyses in which we eliminated the effect of other variables, we detected that the association between HLBS and OHS activities was negative but statistically insignificant ($P > .05$).

Correlation between training received by the workers and PPE use is presented in Table 6. A weakly positive direct correlation was detected between OHS training they received and PPE use ($P = .0001$; Table 6). Mean scores of workers' HLBS subgroups are presented in Table 7.

Table 2. Distribution of Occupational Health and Safety Data and Healthy Lifestyle Behaviors Scale Scores

	n (%)	HLBS Score (Mean ± SD)	t value	P value
Professional/occupational training			4.307	.217
Yes	224 (65.7)	121.12 ± 25.21		
No	116 (34.3)	108.80 ± 24.65		
Occupational health and safety training			3.040	.050
Yes	270 (79.2)	119.05 ± 26.07		
No	71 (20.8)	108.78 ± 22.20		
Personal protective equipment use			2.304	.380
Yes	286 (83.9)	118.31 ± 25.37		
No	55 (16.1)	109.67 ± 25.92		
Occupational accident history			-0.647	.108
Yes	7 (2.1)	110.71 ± 12.94		
No	334 (97.9)	117.04 ± 25.81		

HLBS, Healthy Lifestyle Behaviors Scale

Table 3. Data of the Workers Concerning Work Life and Distribution of Healthy Lifestyle Behaviors Scale Scores

		Mean ± SD (Min-Max)		
Mean working days		67.03 ± 72.76 (1-360)		
Mean daily working hours		8.49 ± 1.34 (1-16)		
	n (%)	HLBS Score (Mean ± SD)	r value	P value
Stress related to the type of work			-0.113	.036*
Yes	130 (38.1)	112.30 ± 26.11		
No	211 (61.9)	119.75 ± 24.95		
Thoughts about level of productivity			0.141	0.009*
Enough	240 (70.4)	118.80 ± 25.64		
Not enough	101 (29.6)	112.44 ± 25.14		
Thoughts about the future of jobs			-0.132	.014*
Hopeful	147 (43.1)	122.79 ± 23.56		
Hopeless	76 (22.3)	107.52 ± 25.97		
Uncertain	118 (34.6)	115.64 ± 26.09		

HLBS, Healthy Lifestyle Behaviors Scale
 * Pearson correlation.

The lowest and the highest mean HLBS scores were obtained in the “exercise” (11.36 ± 3.35) and “self-realization” (33.63 ± 7.82) subgroups, respectively. Total mean score of the scale was 116.91 ± 25.62 points (Table 7).

DISCUSSION

The construction sector has assumed important functions in providing resources for the Turkish economy, creating employment, motivating other sectors, influencing natural and social environments, providing benefits, and paving the way for competition. Government has established institutions, released legislation, determined policies, and actually contributed to the productivity. In rendering services within the construction sector, employers as engineers, architectures, technical consultants, and contractors are on one side, and the employees who contribute their physical and mental labor to the work (foremen and workers) are on the other.⁶ The construction sector is one of the areas where occupational accidents take place. This issue is encountered not only in developing, but also in developed countries. Construction sites pave the way for occupational accidents. Prevention of occurrence of these accidents is not possible only by safety measures taken both by the workers for both others and themselves. Workers are affected by the procedures performed by other workers. For the prevention of all possible occupational accidents, an occupational safety program should be planned and implemented where work

safety of all employees is ensured. When compared with developed countries, occupational accidents and related injuries, disablement, and mortality rates are seriously higher in Turkey. Within this context, both to ensure a healthy and safe working environment where occupational accidents are minimized and update labor act, which has been in effect for more than 30 years and adopt it to European Union acquis, Labor Law (4857) has been enacted.¹¹ The attitudes of workers toward programs to improve workers’ health are important for compliance to healthy lifestyle. Knowledge about health behaviors of workers and effective factors while planning improvement programs will increase success rates.⁹

In this study, it has been stated that the worker’s sex did not have an effect on HLBS. In a study that investigated HLBS among university students, researchers did not determine sex to have an effect on HLBS.¹² Contrary to the present study, some studies demonstrated the effect of sex on HLBS.¹³⁻¹⁵ This phenomenon might stem from the comparatively small number of female workers in the present study. Sex of the workers enrolled in the study had no effect on HLBS. Studies have demonstrated a lack of any effect of age on HLBS.^{12,15-17} In studies performed in various professions (drivers, older American workers, and nurses), the effect of age on HLBS was detected.^{14,18-22} In the present study, the effect of age on HLBS was not seen. In the present study, any effect of marital status on HLBS was not detected. Studies in the literature demonstrate

Table 4. Data Concerning Workers' State of Health and Distribution of Their Healthy Lifestyle Behaviors Scale Scores			
	n (%)	HLBS Score (Mean ± SD)	P value
Own state of health			<i>F</i> = 0.803 <i>P</i> = .449
Good	177 (51.9)	118.28 ± 24.32	
Moderate	146 (42.8)	115.97 ± 27.78	
Bad	18 (5.3)	111.16 ± 18.91	
Regular checkup			<i>t</i> = 6.913 <i>P</i> = .027
Yes	149 (43.7)	127.12 ± 25.70	
No	192 (56.3)	108.99 ± 22.64	
Easy access to health care services			<i>t</i> = 5.287 <i>P</i> = .005
Yes	181 (53.1)	123.55 ± 26.41	
No	160 (46.9)	109.40 ± 22.52	
Thought to consume a balanced diet			<i>F</i> = 8.751 <i>P</i> = .000
Yes	110 (32.3)	123.50 ± 22.48	
No	123 (36.1)	109.91 ± 24.16	
Not always	108 (31.7)	118.18 ± 28.33	
Thought to engage in regular exercise			<i>t</i> = 3.606 <i>P</i> = .048
Yes	116 (34)	123.76 ± 27.19	
No	225 (66)	113.38 ± 24.08	
Engages in social activities			<i>t</i> = 0.008 <i>P</i> = .929
Yes	66 (19.4)	118.42 ± 25.89	
No	275 (80.6)	116.55 ± 25.59	
Presence of chronic illness			<i>t</i> = 0.002 <i>P</i> = .170
Yes	15 (4.4)	116.93 ± 19.19	
No	326 (95.6)	116.91 ± 25.90	
Cigarette smoking			<i>F</i> = 0.683 <i>P</i> = .563
Everyday, at least once	99 (29)	115.38 ± 27.98	
Yes, sometimes	39 (11.4)	116.30 ± 27.02	
Quit smoking	50 (14.7)	114.00 ± 21.22	
Never	153 (44.9)	119.01 ± 25.04	
Alcohol use			<i>F</i> = 12.886 <i>P</i> = .000
1 or 2 times/wk	54 (15.8)	106.40 ± 19.72	
1 or 2 times/mo	27 (7.9)	108.29 ± 24.54	
1 or 2 times/y	77 (22.6)	106.35 ± 20.35	
<1/y	10 (2.9)	115.90 ± 19.42	
Quit drinking	5 (1.5)	97.80 ± 20.99	
Never	168 (49.3)	127.15 ± 26.16	

HLBS, Healthy Lifestyle Behaviors Scale

contradictory results about the effect of marital status on health behaviors.^{12,13,16,19,20}

Because the income levels of the participants were similar, the statistical analyses regarding the income levels were not taken into consideration. Literature reviews demonstrated adverse effects of

lower socioeconomic status on HLBS.^{12,16,23} However, results from one study determined that socioeconomic status did not affect HLBS.^{15,23} Trained workers obeying OHS rules displayed more favorable health behaviors. Higher mean HLBS scores were detected in workers who did not report job

Table 5. Correlations Between Occupational Health and Safety Data and Healthy Lifestyle Behaviors Scale Scores

	Professional/ Occupational Training		Occupational Health and Safety Training		Personal Protective Equipment Use		Occupational Accident History	
	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value	<i>r</i>	<i>P</i> value
HLBS total score	-0.156	0.004	-0.163	0.003	-0.124	0.022	0.035	0.518

HLBS, Healthy Lifestyle Behaviors Scale

stress and who found their level of productivity satisfactory.

In this study, the mean HLBS scores of workers who did not experience work stress and who found the work efficiency level sufficient were high. One study investigated the productivity of nurses and revealed that administrative support increased productivity of nurses, whereas a decrease in this support, autocratic management, and superiors' disregard for the staff's opinions decreased the productivity.²⁴ Psychological health and level of productivity can be accepted as influential factors on health. In the present study, mean HLBS scores of workers who received professional education and used PPE and those who had not been victims of occupational accidents were comparatively higher without any significance. Significantly higher HLBS scores were observed among workers who received OHS training.

Among workers participating in the present survey, mean HLBS scores of those who were on a balanced diet and exercise program had statistically significantly higher mean HLBS scores. The authors of one study reported significant effects of dietary and exercise habits of nurses on their healthy lifestyle behaviors.²¹ Some literature studies support these outcomes.^{14,25} Regular nutrition and exercise can promote productivity and performance of workers. In this study, workers who were engaged in hobbies in their spare times had higher HLBS scores. It has been demonstrated that health professionals

evaluating their spare times had demonstrated healthier behaviors.¹⁴ In a similar study, higher HLBS scores were detected in workers who engaged in social activities.²⁵ The health perception of an individual can affect his or her healthy lifestyle.

In the present study, nonsmokers demonstrated healthier lifestyle behaviors. The effect of smoking on HLBS has been demonstrated frequently.^{13,14,19} Use of tobacco products and especially cigarettes, is a prevalent behavior worldwide and in Turkey. Nearly half of the tobacco product users lose their lives because of a health problem stemming from smoking.

A weakly negative direct correlation was detected between workers' HLBS and the professional and OHS training they received and the PPEs they used. In the partial correlation analyses in which we eliminated the effect of other variables, we detected that the association between HLBS and OHS activities was negative but statistically insignificant. We determined that workers have problems transforming the OHS training into behavior. In this study, positive correlations were detected between the OHS training and occupational training. As the level of OHS training and occupational education increase, use of PPEs also increases. Among occupational accidents, construction-sector accidents rank second in Turkey. With necessary OHS applications, this rate can be minimized.²⁶ Use of PPE, which is included among OHS applications, is important in achieving

Table 6. Correlation Between Training Received by Workers and Use of Personal Protective Equipment

	Personal Protective Equipment Use	
	<i>r</i>	<i>P</i> value
Occupational health and safety training	0.462	0.0001
Professional/occupational training	0.223	0.0001

Table 7. Mean Scores of Workers' Healthy Lifestyle Behaviors Scale Subgroups

Scale Subgroups	Mean ± SD (Min-Max)
Self-realization	33.63 ± 7.82 (15.00-52.00)
Health responsibility	23.14 ± 6.03 (10.00-40.00)
Exercise	11.36 ± 3.35 (5.00-20.00)
Nutrition	14.41 ± 3.68 (6.00-24.00)
Interpersonal support	17.44 ± 4.12 (7.00-28.00)
Stress management	16.80 ± 4.24 (7.00-28.00)
Total	116.91 ± 25.62 (48.00-192.00)

OHS. Results of one study indicated that employment of many unqualified workers in the construction sector can create construction defects and emphasized qualification of the workers regarding construction safety and thus necessity of professional education.²⁷ It is possible that workers have problems to transforming the roles of responsibility-related behaviors into attitude.

Mean total HLBS score of the study participant workers was at a medium level (116.91 ± 25.62). Similar results have been reported in other studies.^{12,14,16,21,25} Detection of medium level of healthy lifestyle behaviors in workers can be evaluated as a favorable outcome as for their state of health.

CONCLUSION

In the present study, HLBS scores of the workers employed at a construction site were of medium level. Lower incidence of occupational accidents in the company indicates that effective OHS training had been provided for the workers. The level of OHS in Turkey has not been satisfactory despite the related institutions, model studies, and well-prepared legislation. According to the 2013 statistics of the Republic of Turkey Social Security Institution (SSI), the findings are as follow²⁸:

- The total number of occupational accidents was 191,389 and the number of occupational diseases was 371 annually.
- The 89% of the individuals who experienced the occupational accidents were male and the accidents mostly occurred in November and December.
- Of the individuals who had accidents, 148,752 were outpatients and 59,527 were inpatients.
- By the end of 2013, the duration of temporary disability was 2,357,505 days.
- In the course of 1 year, 1360 individuals died from occupational accidents.
- Deaths mostly occurred between May and August (68,809 individuals); between 11 and 11:59 am (18,762 individuals); in unskilled jobs (697 individuals), during excavation, construction, repair, demolition (356 individuals) with concussion and internal injuries (229 individuals) and collision with a moving object (197 individuals).

It is very important to increase the precautions, training, and audits regarding OHS. We think that receiving OHS and professional training and use of PPEs favorable affect healthy lifestyle behaviors.

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