Article

Health-promoting lifestyle and its relationship with health literacy of employees of zanjan University of medical sciences

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Abstract

Background: A health-promoting lifestyle and optimal health literacy are among the determining health promotion and maintenance sources.
Objectives: The current study was conducted to determine the status of health-promoting lifestyle and its relationship with health literacy of employees of Zanjan University of Medical Sciences in 2020.
Methods: This cross-sectional descriptive-correlational study was conducted on 308 administrative employees of faculties, hospitals, and health centers in Zanjan. The participants were included in the study using a stratified random sampling method. Three questionnaires, including the demographic information questionnaire, the standard Health-Promoting Lifestyle Profile II (HPLPII) questionnaire, and the Health Literacy for Iranian Adults (HELIA) questionnaire, were used to collect data. Data were analyzed using descriptive and inferential statistics (Pearson's correlation and stepwise regression) in SPSS 24.
Results: The mean age of the employees was 36.51(7.29) years, and most of the participants were female (53.2%), married (80.8%), and had a bachelor's degree or higher (89.3%). The participants' health literacy score was at an adequate level 75.85 (12.23) and their lifestyle score was at a desirable level 137.22 (21.15). The relationship between health literacy dimensions and the lifestyle total score was positive and significant ($p>0.05$).
Conclusion: According to the findings of the current study and the presence of a relationship between health literacy and lifestyle, particularly the predictive role of decision-making dimensions and accessibility of health literacy with the lifestyle of employees, it is suggested that programs be developed and implemented to empower the health literacy of employees.

Implications of this paper in nursing and midwifery preventive care:
- The findings of this study reveal the need to pay more attention to health literacy in health-promoting programs and healthy lifestyles, as important duties of community health nurses.
- It is necessary to plan and design useful educational programs by community health nurses for different clients, including health workers.
- By being aware of the factors related to the lifestyle of health workers, community health nurses can more precisely identify their problems and needs and present their program based on the individual differences of health workers.

Introduction

A healthy lifestyle involves all behaviors that prevent illness and damage, maintain and promote health, and prevent accidents [1]. A healthy lifestyle lowers the risk of many chronic diseases, such as coronary heart disease, stroke, diabetes, and cancer, and prevents many premature deaths [2]. Lifestyle, as one of the most significant factors affecting health, is linked to various aspects of the health of different social strata [3]. In employees, prolonged sitting can lead to a lack of physical activity. However, less attention has been paid to the unhealthy lifestyle of this group of society, and most studies have been conducted in other occupations [4-6]. The improper health status of employees and the prevalence of chronic diseases among them, reduced productivity, absenteeism from the workplace, and early retirement are rooted in the wrong lifestyle of employees [7,8]. In the meantime, paying attention to the lifestyle of employees of universities of medical sciences as guardians of society's health is important [7]. Economic conditions, education level, and health literacy are among the substantial factors that can impact individuals' lifestyles [9]. The World Health Organization (WHO) believes that health literacy includes an individual's ability to acquire, understand, and apply health-related information that is necessary for making appropriate decisions

in this regard [10]. Health literacy has been the interest of policymakers as one of the substantial issues for promoting society's health level and elevating the quality of providing healthcare services [11]. Inadequate health literacy is regarded today as a global threat. Not only individuals but also societies are required to health literacy [12].

Despite the great importance of health literacy, the findings of limited studies have not evaluated the health literacy of people in different regions of the country at a desired level [13-15]. However, among the few studies conducted on the health literacy of employees of universities of medical sciences, Ghanbari et al.'s study indicated that 57% of the employees of Guilan University of Medical Science had adequate health literacy [16].

Studies have also been conducted on the relationship between health literacy and healthy lifestyle, yielding different results. In Amanu's systematic review of African youth, low health literacy was common, and there was a positive causal relationship between low health literacy and negative health outcomes [13]. However, in Dominick et al.'s research, no positive relationship was found between health literacy and physical activity, particularly among Latinos who are exposed to chronic diseases so that the results revealed that by increasing health literacy, individuals' physical activity decreased [15]. Few studies have addressed the relationship between health literacy and the lifestyle of employees in the country, showing results different from the findings of the aforementioned studies. The results of Soleimanpouromran et al.'s research, revealed that health literacy had a positive and significant relationship with health-promoting lifestyle [14]. Moreover, in Ghanbari et al.'s study, no significant relationship was observed between health literacy and employee health status [16]. The present study was conducted to investigate the status of health-promoting lifestyle and its relationship with health literacy of employees of Zanjan University of Medical Sciences.

Methods

This cross-sectional descriptive-correlational study was conducted between February 19 and March 18, 2021. The statistical population consisted of all administrative employees of Zanjan University of Medical Sciences. The participants were selected using the stratified random sampling method in such a way that the university headquarters, faculties, hospitals, and health centers in the city of Zanjan were considered categories, and then according to the population of each category, the samples were determined and selected from each category randomly. The number of participants was determined equal to 28 people by considering a=0.05 and B=0.1 and a correlation coefficient of 0.4 [17]. It means 28 cases were selected from each category on average (from 5 faculties, 3 hospitals, the provincial health center, the health center of the city, and the university headquarters).

11 (categories)×28 = 308

The participants' characteristics included working in the administrative sectors of Zanjan University of Medical Sciences and informed consent to participate in the study.

Three questionnaires, including the demographic information questionnaire, the standard Health-Promoting Lifestyle Profile II (HPLPII) questionnaire [18] and the Health Literacy for Iranian Adults (HELIA) questionnaire [19], were used to collect data. The demographic information questionnaire contained questions about gender, age, education level, occupation, employment status, years of work experience, marital status, income, place of service, field of study, and underlying disease.

The HPLPII questionnaire measures lifestyle in 6 dimensions: Health responsibility (9 questions), physical activity (8 questions), nutrition (9 questions), self-actualization (9 questions), interpersonal relationships (9 questions) and stress management (8 questions). The range of responding to the questions is scored on a four-point Likert scale. The range of the lifestyle total score is between 52 and 208, and the score an individual obtains is measured based on the total mean score (130 points) in such a way that a score lower than the mean score (less than 130 points) denotes an undesirable lifestyle, and a score higher than the mean score (more than 130 points) reports a desirable lifestyle. In Mohammadi Zeidi et al.'s study, the questionnaire's validity and reliability have been confirmed with a Cronbach's alpha coefficient of 0.82 [20]. The reliability of this questionnaire was reported to be 0.89 and

0.88 in the studies conducted by Solhi et al [21] and Khajehnasiri et al [22], respectively, by Cronbach's alpha method. In the present study, the reliability of the questionnaire was confirmed using the internal consistency method and calculating Cronbach's alpha coefficient of 0.82.

The HELIA questionnaire measures health literacy in 5 dimensions, including Access, reading skills, understanding, evaluation, and decision-making, which is scored on a five-point Likert scale (always=5, often=4, sometimes = 3 points, rarely=2, and never = 1). Each individual's raw score in each dimension is obtained from the algebraic sum of the scores of that dimension. Then, these scores are converted into a 0-100 range, and to calculate the total score, the scores of all dimensions are summed and divided by its number (five dimensions). A score of 0-50 is considered inadequate health literacy, a score of 50.1-66 is considered borderline health literacy, a score of 66.1-84 is considered adequate health literacy, and a score of 84.1-100 is considered excellent health literacy. In Montazeri's study, the qualitative content validity of this questionnaire was assessed by 15 experts from various health fields, and its construct validity (using the exploratory factor analysis (EFA) method) and reliability (by calculating the internal correlation coefficient) were evaluated and confirmed using Cronbach's alpha coefficient method (0.72-0.89) [19]. The reliability of this questionnaire was reported to be 0.93 in Esmaeili's study [23] using Cronbach's alpha coefficient. In the present study, to determine the reliability of this questionnaire, the internal consistency method and Cronbach's alpha coefficient calculation were used, with a value of 0.80.

SPSS software version 24 was used for data analysis. All obtained data were reported in the form of statistical tables using descriptive statistics indicators (frequency, frequency percentage, mean, and standard deviation). Pearson's correlation coefficient was used to determine the correlation level between lifestyle and health literacy, and stepwise regression was used to determine the variables' predictive power. A significance level of less than 0.05 was considered. In addition, this study was approved by the Ethics Committee of Zanjan University of Medical Sciences (IR.ZUMS.REC.1399.086).

Results

Of 308 medical workers who entered the study, the majority were female (53.2%), married (80.8%), had a bachelor's degree or higher (89.3%), and were in the age group of 35-40 years old (26.6%). The majority of employees had permanent employment status (64.6%) and relatively sufficient income (72.4%). The highest frequency in terms of work experience belonged to the period of 11-15 years (27.6%).

The participants' mean total score of lifestyles were137.22 (21.15), which was at a desirable level, but very close to the undesirable lifestyle level. According to Table 1, the highest score among the lifestyle dimensions belonged to interpersonal relationships (4.31) 25.78 and the lowest belonged to physical activity 18.41 (5.11) (Table 1).

Table 1: The means and standard deviations of the scores of the dimensions of lifestyle for participants

Dimensions	Mean (SD)	Median	Minimum	Maximum
Responsibility	24.06(4.33)	24	14.00	34.00
Physical activity	18.41(5.11)	18.5	8.00	32.00
Nutrition	24.83(4.32)	25	15.00	34.00
Self-actualization	24.88(4.70)	25	11.00	36.00
Interpersonal relationships	25.78(4.31)	26	10.00	34.00
Stress management	19.23(4.18)	19	8.00	30.00
Total lifestyle	137.22(21.15)	135	74.00	198.00

SD: Standard Deviation

As shown by the findings, according to the mean (standard deviation) of health literacy [75.85 (12.23)], the health literacy of the participants in the study was at a desirable level. The highest score of health literacy belonged to understanding 83.61 (15.46), and the lowest belonged to

evaluation 72.62 (16.86) and decision-making 72.63 (13.39) among the participants (Table 2). According to the findings, the relationship of "total health literacy" with all dimensions of lifestyle and "total lifestyle" was positive and significant (P<0.001) (Table 3).

Table 2: The means and standard deviations of the scores of the dimensions of health literacy (within a range of 0-100) for participants

Dimensions	Mean (SD)	Median	Minimum	Maximum
Reading	74.41 (19.66)	75	6.25	100
Access	77.04 (15.94)	75	33.33	100
Understanding	83.61 (15.46)	85.71	42.86	100
Evaluation	72.62 (16.86)	75	31.25	100
Decision-making	72.63 (13.39)	72.91	27.08	100
Total health literacy	75.85 (12.23)	76.89	40.15	100

SD: Standard Deviation

Table 3: The relationship between health-promoting lifestyle and health literacy

Variable	r	Reading	Access	Understanding	Evaluation	Decision-Making	Total Health Literacy
Responsibility	r	**0.345	**0.431	**0.302	**0.305	**0.532	**0.513
Physical activity	r	0.063	*0.127	-0.11	0.05	**0.224	**0.137
Nutrition	r	**0.303	**0.324	**0.272	**0.252	**0.466	**0.436
Self-actualization	r	**0.216	**0.350	**0.258	**0.298	**0.365	**0.389
Interpersonal relationships	r	*0.150	**0.338	**0.282	**0.339	**0.333	**0.374
Stress management	r	*0.176	**0.281	0.109	*0.178	**0.222	**0.248
Total lifestyle	r	**0.261	**0.388	**0.251	**0.297	**0.451	**0.439

*p< 0.05; **p<0.001

In evaluating the relationship between the dimensions of health literacy and the lifestyle total score, the stepwise regression method was used, and only two variables of decision-making and access among the dimensions of health literacy remained in the model as significant independent variables about the lifestyle total score. In Table 4, the results of this evaluation indicate that decision-making has a β score of 0.34 and a positive and significant relationship (p<0.01). The decision-making dimension of health literacy can indeed predict 34% of health-promoting lifestyles (p<0.01). Also, access has a β score of 0.18, showing a positive and significant relationship between access and the lifestyle total score (p<0.01). The access dimension of health literacy can predict 18% of health-promoting lifestyles.

Table 4: The stepwise regression model in evaluating the relationship between the dimensions of health literacy and the lifestyle total score

Independent Variable	β	β Standard Error	t	p
Decision-making	0.348	0.058	5.979	<0/001
Access	0.185	0.049	3.787	<0/001

Discussion

This study was conducted to determine the status of health-promoting lifestyle and its relationship with health literacy in 308 employees of Zanjan University of Medical Sciences in 2020. As shown by the findings of the present study, the

lifestyle of employees of Zanjan University of Medical Sciences was reported to be desirable, although it was very close to an undesirable status.

The results of various studies conducted in Iran demonstrate different findings. For example, in Moradi et al.'s study (2016), the lifestyle and health-promoting behaviors of employees of the Andimeshk health sector were at a moderate level [7]. However, in Jalilian et al.'s study (2018) on the employees of Ilam University of Medical Sciences, the employees' health-promoting behaviors were in an undesirable status [24]. The discrepant results can be attributed to the stress of the workplace and inactivity. In Karimi et al.'s study (2018) on the employees of Mazandaran University of Medical Sciences, the lifestyle status of most of the employees was at a moderate level [25]. In Khajehnasiri et al.'s study (2022) on Tehran tobacco workers, the mean score of health-promoting behaviors was at a moderate level [22]. Also, in Jafari et al.'s study (2020) on teachers and nurses in the city of Zanjan, the quality of life and health-promoting lifestyle were at a moderate level [26]. In addition, in Ghanbary Sartang et al.'s research (2016) on shift work and non-shift work nurses in Ilam province, the nurses in the shift work group showed lower mean scores in food patterns and habits, stress, exercise and physical activity, and interpersonal relationships, and also the total score of lifestyle and health promotion [27]. Due to the nature of their work, shift work individuals seem to lose the opportunity to exercise and physical activity during the day and spend more time resting and sleeping.

In terms of comparing the dimensions of lifestyle, the results of the current research revealed that the employees' lowest score belonged to the physical activity dimension, which is aligned with Karimi et al.'s study [25]. In addition, in Jalilian et al.'s study (2018), the employees' physical activity score was at a lower level compared to other dimensions of health-promoting behavior [24]. These findings were not far from expected due to the working conditions and the sedentary nature of the employees' work. At the same time, such evidence highlights the importance of employee inactivity, revealing the need to increase physical activity in this stratum of society. Hence, making changes in different dimensions of lifestyle, particularly in the physical activity dimension, to promote the lifestyle of employees seems necessary.

Based on the present study findings, among the dimensions of lifestyle, the highest score belonged to the interpersonal relationships dimension. One of the reasons for this finding is the cultural values governing the research setting, emphasizing the desirable interpersonal relationships. Furthermore, holding various interpersonal relationships workshops in their workplace was proposed, which are organized in a planned and regular manner by the university's education department. On the other hand, in Baghianimoghadam et al.'s study (2013), most of the employees and workers were at a moderate level regarding the interpersonal relationships subscale [28]. In Jalilian et al.'s study (2018), the highest score belonged to spiritual growth (24), and in Karimi et al.'s study (2018), among various factors involved in lifestyle, the disease prevention area gained the highest score [25].

The study findings demonstrated that the participants' health literacy was at an adequate level. It was shown in Esnaashari et al.'s research (2015) that the health literacy of Hamedan employees was inadequate which is inconsistent with the results of the present research [29]. The reason for the inconsistency can be attributed to the research population. In the present research, the research population consisted of the employees of the University of Medical Sciences, while in Esnaashari et al.'s research that was conducted at Bu-Ali Sina University in Hamedan, the research population consisted of the employees of the Faculty of Agriculture, the Faculty of Basic Sciences, and the Faculty of Technical Engineering. Moreover, in Peyman et al.'s research (2016), the health literacy of healthcare workers and its related components in the city of Neishabur was evaluated to be at a low level [17]. In Khoshravesh et al.'s study (2018) conducted on the employees of Hamedan University of Medical Science, more than half of the employees had inadequate or borderline health literacy [30]. The diversity observed in this regard is related to the difference in the target population investigated in different regions, the difference in age groups, and the different tools used in measuring the health literacy level. However, the important point is that the inadequate level of

health literacy in various studies in the country cannot be overlooked.

According to the findings of the current study, the relationship of "total health literacy" with all dimensions of lifestyle and "total lifestyle" was positive and significant. These findings are consistent with Govahi Kakhki et al.'s study on infertile male and female individuals in Zahedan [31], Soleimanpouromran et al.'s study on the employees of Payam-e-Noor University in Bojnurd [14]. Also, Adam's study in Australia also showed that the number of high-risk behaviors was higher in individuals with limited health literacy [32].

According to the above results, health literacy influences health-promoting behaviors, including self-care, stress management, exercise, nutrition, etc., and can affect individuals' health status. Health literacy culminates in the adoption of preventive behaviors to maintain health, and individuals with higher literacy are more careful about their health and better evaluate their health status.

Also, the relationship of the access dimension of health literacy with all dimensions of lifestyle and total lifestyle was positive and significant. This finding is aligned with the findings of the studies conducted by Soleimanpouromran et al. The evidence shows that television is the primary source for most people in society, and health programs have affected the change of mind and health behavior of the televiewers. Individuals use the Internet to seek health recommendations and care; however, it is not the primary source to acquire health information and change a healthy lifestyle yet [14]. Digital health services change the way individuals manage their health and participate in their self-care. On the other hand, there are inequalities in digital health literacy and access that continue to affect vulnerable populations. At present, the same obstacles facing with individuals with limited health literacy exist in the digital area. The potential for the continuation and growth of inequalities in the electronic health age is very high, particularly since more information is provided online. Healthcare organizations should adopt a universal precautions-based approach in the design of e-health services to make them accessible to all individuals [33].

Moreover, the relationship between the understanding dimension of health literacy with all dimensions of lifestyle and total lifestyle, except physical activity and stress management, was positive and significant, which is consistent with the studies conducted by Soleimanpouromran et al. [14] and Ahmadzadeh [34]. Understanding and reading skills of health concepts lead to improving health-promoting behaviors, including self-care, physical activity, and commitment to the group, and this relationship can motivate and pursue health in individuals.

However, in evaluating the predictive power of the dimensions of health literacy with the lifestyle total score, two variables of access and decision-making among the dimensions of health literacy as independent variables had the power to predict lifestyle. Individuals' access to correct information in the community results in increased necessary information, which is the first step toward health-promoting behaviors. In fact, by increasing accessibility, better conditions will be provided for increasing knowledge and awareness, consequently, laying the ground for adopting a healthy and hygienic lifestyle. Additionally, improving an individual's decision-making power can lead to promoting the lifestyle [35] because by increasing the decision-making power, the possibility of choosing and practicing healthy behaviors increases, too. Esmaeili et al.'s research also demonstrated the relationship between decision-making and lifestyle [23].

Since the data were collected using questionnaires and self-report information, the present research has limitations concerning descriptive studies of the correlational type and the probability of its non-generalization to other societies. To eliminate the likelihood of employees' busy working hours interfering with the time of completing the questionnaires, we tried to provide them with the questionnaires at more convenient times.

Conclusion

In this study, the lifestyle status of the employees of Zanjan University of Medical Sciences was desirable and the participants' health literacy was at an adequate level. In addition, according to the findings, health literacy was correlated with the lifestyles of these employees. Considering the importance of the health literacy issue and its

relationship with health-related outcomes and related costs, and given that these individuals are among the most crucial influential groups in improving people's lifestyles and leading them toward healthy behaviors, more attention is needed to be paid to this issue in plans by health policymakers.

Ethical Consideration

This study was approved by the Ethics Committee of Zanjan University of Medical Sciences (IR.ZUMS.REC.1400.086). Informed written consent was obtained from the research samples, and the anonymity of the questionnaires was also observed. All ethical principles were completely followed in all stages of the research.

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Conflict of interest

No conflict of interest.

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Authors' contributions

Z.H.A.: Data collection and edition of the article; N.J.V.: Study design, Supervision, and edition of the article; M.M.: Participation in study design and draft writing; R.F.: Statistical analysis of the study.

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