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Evaluation of Healthy Lifestyle Behavior of Family Physicians and Lifestyle Medicine in Their Clinical Practice

Aile Hekimlerinin Sağlıklı Yaşam Biçimi Davranışlarının ve Klinik Uygulamalarında Yaşam Biçimi Tıbbının Değerlendirilmesi

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ABSTRACT

Objective: This study aimed to assess the healthy lifestyle behavior of family physicians (FPs) and their engagement in lifestyle medicine practices within their clinical practice.

Methods: An online questionnaire was developed to collect responses from FPs between July 2018 and August 2019. A descriptive and correlational design was employed. The questionnaire consisted of two parts: "personal information of participants" and "the Healthy Lifestyle Behavior Scale-II". The survey was conducted using an e-survey platform, and targeted a convenience sample of FPs from eight countries in a cross-sectional study. Participants were provided with information about the survey length, data storage procedures, duration of storage, the identity of the investigators, and the purpose of the study.

Results: The study included 131 FPs, with a higher proportion of male participants. The frequency of smoking was found to be significantly higher among Turkish FPs (p=0.013). However, no statistically significant difference was observed among FPs in terms of the total score on the scale or the scores on the six dimensions.

Conclusion: The majority of FPs expressed a desire for further education, suggesting a need to incorporate educational interventions into medical school curricula. Additionally, well-structured web-based massive open online courses could serve a solution to meet the educational needs of FPs in the realm of healthy lifestyle behaviors and lifestyle medicine practices.

Keywords: Lifestyle medicine, family medicine, clinical practice

ÖZ

Amaç: Bu çalışmanın amacı, aile hekimlerinin sağlıklı yaşam biçimi davranışlarını değerlendirmek ve klinik uygulamalarında yaşam biçimi tıbbına yönelik katılımlarını incelemektir.

Yöntemler: Temmuz 2018 ile Ağustos 2019 tarihleri arasında aile hekimlerinden veri toplamak amacıyla çevrimiçi bir anket geliştirildi. Tanımlayıcı ve korelasyonel bir araştırma deseni kullanıldı. Çalışmada uygulanan anket, "katılımcıların kişisel bilgileri" ve "Sağlıklı Yaşam Biçimleri Davranış Ölçeği-II"i içermektedir. Kesitsel bir çalışma olarak tasarlanan bu araştırmada, örneklem kolayda örnekleme metodu ile sekiz ülkeden belirlenmiştir, ve anketler katılımcılara elektronik ortamda uygulanmıştır. Katılımcılara anketin süresi, veri saklama işlemleri, saklama süresi, araştırmacıların kimliği ve çalışmanın amacı hakkında bilgi verilmiştir.

Bulgular: Çalışmaya 131 aile hekimi katılmış olup, erkek katılımcı oranı daha yüksek bulunmuştur. Sigara içme sıklığının Türk aile hekimleri arasında anlamlı derecede yüksek olduğu tespit edilmiştir (p=0,013). Ancak, ölçek toplam puanı veya altı boyutta alınan puanlar açısından aile hekimleri arasında istatistiksel olarak anlamlı bir fark bulunmamıştır.

Sonuç: Çoğu aile hekimi, bu alanda daha fazla eğitim almak istediklerini belirtmiştir, bu da tıp fakültelerinin müfredatına eğitim müdahalelerin dahil edilmesi gerekliliğini göstermektedir. Ayrıca, iyi yapılandırılmış web tabanlı kitlesel çevrimiçi kurslar, aile hekimlerinin sağlıklı yaşam biçimi davranışları ve yaşam biçimi tıbbı uygulamalarına yönelik eğitim gereksinimlerini karşılamada etkili bir çözüm olabilir.

Anahtar Sözcükler: Yaşam biçimi tıbbı, aile hekimliği, klinik uygulama

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INTRODUCTION

In 1989, a new approach, "lifestyle medicine (LSM)," entered the field of medicine during a symposium on cancer (1). Rippe has published an article that indicates the association between lifestyle and risk factors of chronic diseases in his book (2). While lifestyle modifications can improve health status, many guidelines and institutions also brought LSM to the forefront (2-4).

LSM is a growing field and is defined in the Journal of the American Medical Association as "evidence-based practice of assisting individuals and their families to adopt and sustain behaviors that can improve health and quality of life" (5,6). Nowadays, LSM is essential not only for patients who struggle with non-communicable diseases but also for primary care physicians, whose duties include managing and preventing non-communicable diseases. Medical doctors, who are role models in their society, have particularly important awareness and attitudes, especially those of family physicians (FPs), due to their holistic, patient-centered, and person-involved approach (7). Furthermore, LSM practices can reduce healthcare costs by decreasing the need for medications, procedures, and hospitalizations (8). Primary care physicians who learn LSM practices can provide patients with evidence-based recommendations that are tailored to their individual needs and preferences. They can also offer ongoing support and education to help patients make sustainable lifestyle changes (9).

Well-structured goals for LSM continuing medical education for FPs include competencies in the areas of leadership, knowledge, assessment skills, management skills, and the use of office and community support (10). Patients' health behaviors and physicians' personal health behaviors are related. Increasing the use of health promotion counseling in practice requires addressing the physicians' own health practices, which are strongly and consistently related to health promotion counseling. Patients also find doctors who briefly describe some of their own healthier habits to be more credible and inspiring (11,12). If a LSM approach could be internalized in primary care, which is responsible for the management of non-communicable diseases, the causes of these diseases could be restrained (10,12). Patients' behaviors could be our target for improvement, while the well-being of health workers is also crucial. The priority should be implementing the healthcare system (13).

MATERIALS AND METHODS

Data collection for this study primarily relied on a questionnaire. The questionnaire consisted of two sections designed to gather relevant information from the participants. The first section, developed by reviewing the relevant literature, aimed to collect personal information, including demographic details, general health perception, habits, nutritional and physical activity status, as well as inquiries about the participants' engagement in LSM practices within their clinical practice.

To assess healthy lifestyle behaviors, the Healthy Lifestyle Behavior Scale-II, developed by Walker, Sechrist, and Pender (1987) and revised in 1996 (14), is used. was utilized. The scale, previously tested for reliability and validity in a Turkish context by Pınar et al. (12), comprised 52 items and six sub-scales: health responsibility, physical activity, nutrition, moral development, interpersonal relations, and stress management (16).

The internet-based questionnaire was created using Google Docs and distributed via email, social media platforms, and WhatsApp to FPs groups between July 2018 and August 2019. The questionnaire was provided in both English and Turkish to accommodate the participants' language preferences.

Ethical approval for the study was obtained from the Ethical Committee of İzmir University of Economics (Approval number: 11, date: 04.09.2018). Informed consent was obtained individually from each participant at the beginning of the survey. Participants provided digital consent for participation, and data collected during the study were securely stored on an encrypted hard drive by the principal investigator. Prior to distribution, the electronic questionnaire (in English) was pilot tested to ensure clarity and ease of use. The survey was open to the public, and participants were recruited through various online channels, including social media and email groups. Responses were directly entered into a database, and survey completion was voluntary, with no incentives provided. The questions were formatted in the Google form, allowing the investigators to easily check for completeness of responses.

The collected data were analyzed using SPSS version 21 (IBM, Chicago, IL, USA). Descriptive statistics, correlational analyses, and group comparison analyses were performed. Non-parametric tests such as Spearman rho, Mann-Whitney U, and Kruskal-Wallis H were employed to accommodate the non-normal distribution of the data.

RESULTS

Participants were 131 FPs, 64 of whom were Turkish native speakers. The male gender ratio was higher, with (88) males. These FPs were from the special interest groups, and only 10% didn't answer as they were "busy" and/or "on vacation."

The frequency of smoking is statistically significant higher in the Turkish FPs ($p=0.013$).

Compared to the Turkish FPs' group, the non-Turkish FPs were statistically significantly higher in terms of age ($p=0.002$) and average years worked in family health center (FHC) ($p=0.001$).

The frequency of female sex in the Turkish physician group was statistically significantly higher ($p=0.024$). The frequency of smoking was statistically significantly higher in the Turkish FPs group ($p=0.013$). No statistically significant difference was observed between female and male participants in the whole study group regarding the total scale score and the scores of six dimensions. (Table 1).

No statistically significant difference was observed in the overall study group for the total scale total score and six-dimension scores according to cigarette/e-cigarette use. (Table 2).

Table 3 shows the evaluation of the characteristics of FPs' lifestyle practices and engagement with LSM.

There is a low-level positive relationship between age and nutrition. $r(131)=0.18$, $p<0.05$ (Table 4).

Table 1. Comparison of total scores by gender and scores of six dimensions in the whole study group

	Gender	N	Mean	Standard deviation	p
Scale total score	Male	88	18.6364	5.41429	0.323
	Female	43	17.6429	5.18356	
Health responsibility	Male	88	21.4318	4.20125	0.290
	Female	43	20.5000	5.54912	
Stress management	Male	88	16.5568	3.97942	0.240
	Female	43	15.7381	3.01265	
Self-improvement	Male	88	28.9318	5.48309	0.389
	Female	43	28.0000	6.28199	
Interpersonal relationships	Male	88	26.0795	4.48297	0.128
	Female	43	24.7381	5.05607	
Nutrition	Male	88	23.3977	4.79113	0.833
	Female	43	23.2143	4.22268	
Physical activity	Male	88	18.6364	5.41429	0.323
	Female	43	17.6429	5.18356	

t test in independent groups

Table 2. Comparison in terms of total score and six dimensions according to cigarette/e-cigarette use in the whole study group

	Cigarette/e-cigarette use	n	Mean	Standard deviation	p
Scale total score	Yes	9	133.2222	20.00486	0.323
	No	122	133.1393	22.29714	
Health responsibility	Yes	9	20.1111	3.48010	0.290
	No	122	21.1393	4.79551	
Stress management	Yes	9	17.3333	2.29129	0.240
	No	122	16.2049	3.76793	
Self-improvement	Yes	9	28.1111	5.84047	0.805
	No	122	28.6066	5.77907	
Interpersonal relationships	Yes	9	27.2222	4.02423	0.300
	No	122	25.5410	4.72053	
Nutrition	Yes	9	23.3333	4.63681	0.989
	No	122	23.3115	4.60701	
Physical activity	Yes	9	17.1111	5.27836	0.511
	No	122	18.3361	5.38840	

t test in independent groups

There is a significant but low-level negative relationship between graduation year and nutrition. r (131) =0.20, p<0.05. (Table 5)

When the averages are considered, the waist/hip ratio of men (M=0.96, SE=0.02) is higher than that of women (M=0.79, SE=0.22). The difference between them is significant. t (100) =4.674, p<0.05 (Table 6).

The Body Mass Index (BMI) of women (M=23.39, SE=0.48) is lower than that of men (M=26.96, SE=0.88). The difference between them is significant. t (128) =-3.849, p<0.05

FPs reported that the origin of the LSM knowledge was their curriculum of the trainee program and/or faculty of medicine (37.4%-19.1%), while 42.7% have learned by themselves due to their special interest. The most needed subjects in which improvement was needed were stress management, nutrition, physical activity, healthy sexual life, and smoking addiction.

Most of the participants were willing to improve their knowledge about LSM (96.2%), and 84% of FPs were using LSM for their daily practice. 71% of the FPs have assessed their patients' compliance to lifestyle modification as more than medium.

Table 3. Characteristics of FPs' lifestyle practices and engagement with lifestyle medicine

			Do you recommend lifestyle changes in the prevention and treatment of diseases to your patients?			Total
			Always	Usually	Sometimes	
Do you use tobacco products containing nicotine such as cigarettes/electronic cigarettes / waterpipe?	Yes	n	6	2	1	9
		Percentage	66.7%	22.2%	11.1%	100.0%
	No	n	80	34	8	122
		Percentage	65.6%	27.9%	6.6%	100.0%
Do you track the calories you get daily?	Always	n	3	0	0	3
		Percentage	100.0%	0.0%	0.0%	100.0%
	Usually	n	26	3	1	30
		Percentage	86.7%	10.0%	3.3%	100.0%
	Sometimes	n	29	16	1	46
		Percentage	63.0%	34.8%	2.2%	100.0%
	Rarely	n	10	13	3	26
		Percentage	38.5%	50.0%	11.5%	100.0%
	Never	n	18	4	4	26
		Percentage	69.2%	15.4%	15.4%	100.0%
Do you add salt without tasting food?	Always	n	2	0	0	2
		Percentage	100.0%	0.0%	0.0%	100.0%
	Usually	n	4	0	3	7
		Percentage	57.1%	0.0%	42.9%	100.0%
	Sometimes	n	17	8	1	26
		Percentage	65.4%	30.8%	3.8%	100.0%
	Rarely	n	16	9	3	28
		Percentage	57.1%	32.1%	10.7%	100.0%
	Never	n	47	19	2	68
		Percentage	69.1%	27.9%	2.9%	100.0%

Table 3. Characteristics of FPs' lifestyle practices and engagement with lifestyle medicine

			Do you recommend lifestyle changes in the prevention and treatment of diseases to your patients?			Total
			Always	Usually	Sometimes	
How many cups (1 glass=200 ml) of carbonated beverages (Cola, Fanta, Sprite, etc.) do you drink in a week?	Never	n	45	16	5	66
		Percentage	68.2%	24.2%	7.6%	100.0%
	1-2 glasses	n	31	13	2	46
		Percentage	67.4%	28.3%	4.3%	100.0%
	3-5 glasses	n	7	4	2	13
		Percentage	53.8%	30.8%	15.4%	100.0%
	5+ glasses	n	3	3	0	6
		Percentage	50.0%	50.0%	0.0%	100.0%
Do you use assistive mobile applications (such as iphone health, nike running club or fitnesspal) while exercising?	Always	n	8	1	0	9
		Percentage	88.9%	11.1%	0.0%	100.0%
	Usually	n	16	5	0	21
		Percentage	76.2%	23.8%	0.0%	100.0%
	Sometimes	n	23	5	2	30
		Percentage	76.7%	16.7%	6.7%	100.0%
	Rarely	n	19	8	2	29
		Percentage	65.5%	27.6%	6.9%	100.0%
	Never	n	20	17	5	42
		Percentage	47.6%	40.5%	11.9%	100.0%
Do you engage in physical activity during your daily work? (For example, to walk to work or prefer stairs instead of an elevator)	Always	n	20	2	1	23
		Percentage	87.0%	8.7%	4.3%	100.0%
	Usually	n	39	11	3	53
		Percentage	73.6%	20.8%	5.7%	100.0%
	Sometimes	n	16	15	3	34
		Percentage	47.1%	44.1%	8.8%	100.0%
	Rarely	n	9	8	2	19
		Percentage	47.4%	42.1%	10.5%	100.0%
	Never	n	2	0	0	2
		Percentage	100.0%	0.0%	0.0%	100.0%

FPs: Family physicians

DISCUSSION

In this study, we examined the lifestyle and practice of LSM among FPs, with a focus on the differences observed among Turkish native speakers and non-Turkish FPs. Our findings provide insights into the association between FPs' lifestyle choices and their approach to recommending lifestyle changes for patients. The World Health Organization (WHO) reports that cardiovascular diseases (CVD) are the leading cause of death globally (17). Coronary artery disease (CAD) is a major cause of CVD-related deaths. Among the risk factors found in, approximately 90%, of patients with CAD, smoking, sedentary life, excess weight and obesity, hypertension (HT), hyperlipidemia, and diabetes mellitus (DM) can be listed (18). Lifestyle changes can also be used to prevent complications related to cerebrovascular diseases, DM, and HT (19,20). For this reason, primary and secondary protection may benefit both in an individual and a social sense through lifestyle changes.

Lifestyle Medicine

The use of evidence-based lifestyle changes approaches to prevent, treat, and often reverse the main causes of chronic disease associated with lifestyle (11,21).

Table 4. Relation between nutrition and FPs' ages

		Nutrition	Age
Nutrition	Pearson correlation	1	0.182*
	Sig. (2-tailed)		0.038
	n	131	131
Age	Pearson correlation	0.182*	1
	Sig. (2-tailed)	0.038	
	n	131	131

*p < 0.05 is statically significant

Table 5. Relation between nutrition and the year of graduation

		Nutrition	Year of graduation
Nutrition	Pearson correlation	1	-0.199*
	Sig. (2-tailed)		0.023
	N	131	131
Year of graduation	Pearson correlation	-0.199*	1
	Sig. (2-tailed)	0.023	
	N	131	131

*p < 0.05 is statically significant

In this context, this research evaluates the healthy lifestyles of FPs serving in primary care and determines the place of lifestyle changes in clinical practice. No significant difference was observed in female and male gender or using neither cigarette non-e-cigarettes in the whole study group in terms of scale total score and scores of six dimensions, while there was no statistically significant difference between the Turkish and non-Turkish groups. As non-communicable diseases are universal, LSM must also be considered universally applicable.

The demographic characteristics of our participants revealed that the majority of FPs were male, with a higher proportion among the Turkish native speakers. Moreover, the Turkish FPs showed a statistically significantly higher frequency of smoking compared to the non-Turkish FPs. This observation highlights a potential area of concern for the Turkish physician group, as smoking is known to have detrimental effects on health.

Nevertheless, the frequency of smoking is statistically significant in the Turkish FPs' group compared to the non-Turkish FPs' group (p=0.013). Cigarette smoking is a cause of preventable diseases and one of the most important health problems in the world. Turkey is second in cigarette consumption per person among European countries (after Greece). It was the fifth largest production in 1997 (22). The first anti-tobacco law was adopted in 1996, and in collaboration with the WHO Framework Convention on Tobacco Control, this law has been revised in 2004 and 2008. In this way, the improvement of indoor air quality can be achieved (23). According to the Global Adult Tobacco Surveys conducted in 2008 and 2012, the prevalence of tobacco usage in Türkiye has decreased from 31.2% to 27.1%. In males, the rate has decreased from 47.9% to 41.5%, while in females, it has decreased from 15.2% to 3.1%. in another study that was carried out, the prevalence of tobacco usage was examined. However, there was a decrease between the years 2003 and 2012 followed by a resurgence in 2014 (24). As a result of the change in the law in 2008, the policy has been implemented more comprehensively. Turkey has become one of the first countries to start and complete the MPOWER criteria. However, in 2025, it is estimated that there will be about 19% of the population (around 12.7 million) as consumers. According to Çerçi's research that was performed among 415 FPs via stratified sampling in Turkey, the prevalence of smoking was revealed to be 30.9% in 2017 (25). In Atayoğlu et al. study; among 237 physicians, 58.4% of them reported as "never smoker" while 21.1% were "current smoker" and 20.5% were "former smokers" (26). In our study, the LSM approach in the daily routine of FPs was significant, and also most of them were not smoking.

FPs reported that the origin of the LSM knowledge was their curriculum of the trainee program and/or faculty of medicine

Table 6. Waist/Hip and BMI Comparison by Gender

	Group	n	Mean	SD	SE	T	df	p
Waist/Hip	Woman	88	0.79	0.19	0.022	-4.674	100	**0.00**
	Man	43	0.96	0.11	0.021			
BMI	Woman	88	23.39	4.50	0.480	-3.849	128	**0.00**
	Man	43	26.96	5.76	0.889			

BMI: Body Mass Index, SD: Standard deviation, SE: Standard Error

(37.4%-19.1%) while 42.7% has learned by themselves due to their special interest. Nowadays, massive open online courses (MOOCs) are gaining attention for providing access to knowledge without borders, discrimination, etc. (27). The most needed learning topics to improve themselves were stress management, nutrition, physical activity, healthy sexual life, and smoking addiction. According to Polak et al. (7) study, learning LSM improves the lifestyle of FPs, too. While the targets are well-defined, implementing these topics (especially "nutrition" and "stress-management") the curriculum seems essential not only for the trainee programs but also for future physicians.

Most of the participants were willing to improve their knowledge about LSM (96,2%), and 84% of FPs was using LSM for their daily practice. They have assessed the compliance of their patients to lifestyle modification as more than medium by 71% of the FPs. Lianov and Johnson (18) revealed that if physicians' inadequate confidence and lack of knowledge and skill could be overcome, counseling could be more successful, as changing unhealthy behaviors is a foundational aspect (21).

According to Malatskey et al. (10) "trained residents had a better awareness of LSM and were more confident in their ability to succeed and influence a patient's behavioral changes." However, participation in the LSM training was not found to be a significant predictor of either the mean composite attitude or confidence score in the multivariate linear regression models. Personal health behaviors (such as following a Mediterranean diet) and finishing medical school in Israel were discovered to be significant predictors of both the mean composite attitude and confidence scores. In our study, there wasn't any significant difference among dimensions, attitude, behavior regarding counselling on LSM (supplement). However, there is a significant relationship between age, graduation duration, and nutrition.

Burnout and lack of personal rights are some of the burdens that FPs faced over the past years (28,29). Needs of healthcare facilities include physicians counseling patients on non-communicable diseases (NCDs) prevention and treatment for primary care, especially during the COVID-19 pandemic (8,30,31). LSM could be a solution for the well-being of FPs and societies, especially in terms of nutrition and stress-management for old and new challenges of the healthcare system. Well-structured mobile applications are also valuable tools to manage LSM modifications (32).

In terms of age and years worked in a FHC, the non-Turkish FPs were significantly older and had more years of experience than their Turkish counterparts. These findings suggest a potential difference in the career trajectories between the two groups, with the non-Turkish FPs having a longer professional history. This difference may influence their approach to LSM and patient care.

Regarding gender, our results indicated a statistically significant higher frequency of female FPs among the Turkish physician group. However, no significant differences were observed between male and female FPs in terms of the total score of the overall scale and the scores of six dimensions, indicating that gender did not significantly impact the FPs' lifestyle choices and practice of LSM.

Our study, analyzing the association between lifestyle choices and the practice of LSM, found no statistically significant differences in the overall study group in terms of scale total score and scores of six dimensions according to cigarette/e-cigarette use. This suggests that the FPs' personal smoking habits did not significantly affect their adherence to a healthy lifestyle or their recommendation of lifestyle changes to patients.

Furthermore, we explored the association between FPs' lifestyle choices and specific practices related to LSM. The results showed interesting patterns. For instance, FPs who always recommended lifestyle changes to patients were more likely to track their daily calorie intake. Additionally, those who engaged in physical activity during their daily work were more likely to recommend lifestyle changes. These findings indicate a positive association between FPs' personal lifestyle choices and their commitment to promoting lifestyle changes in patient care.

Moreover, we examined the relationship between nutrition and FPs' age and year of graduation. Our analysis revealed a statistically significant but weak positive correlation between age and nutrition, suggesting that older FPs may exhibit better nutrition habits. Additionally, a negative correlation was found between nutrition and the year of graduation, indicating that FPs who graduated more recently had poorer nutritional habits. These findings underscore the importance of considering FPs' age and years of experience when addressing their nutrition practices.

Overall, our study sheds light on the lifestyle choices and practices of LSM among FPs, with specific attention to differences between Turkish native speakers and non-Turkish FPs. The results highlight the need for targeted interventions, particularly regarding smoking cessation among Turkish FPs, as well as the importance of considering FPs' age and years of experience in promoting healthy nutrition habits. These findings can inform future strategies to enhance LSM practices among FPs, ultimately benefiting patient care and overall public health.

Study Limitations

This research has been performed among the special interest groups, so they are already ready to learn and make a difference for themselves and for their communities.

CONCLUSION

LSM is universal; the concept is not affected by age, sex, cultural background, years that were spent at FHC, and also the lifestyle of FPs. The educational needs could be implemented into the curriculum of medical faculties, and well-structured, web-based MOOCs could provide a solution.

Ethics

Ethics Committee Approval: Ethical approval for the study was obtained from the Ethical Committee of İzmir University of Economics (Approval number: 11, date: 04.09.2018).

Informed Consent: Informed consent was obtained individually from each participant at the beginning of the survey.

Footnotes

Authorship Contributions

Concept: Ö.G., H.K., Design: Ö.G., H.K., Supervision: M.İ.Ş., Resources: Ö.G., H.K., Material: Ö.G., H.K., Data Collection or Processing: Ö.G., H.K., M.İ.Ş., Analysis or Interpretation: Ö.G., H.K., M.İ.Ş., Literature Search: Ö.G., H.K., Writing: Ö.G., H.K., M.İ.Ş.

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