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RESEARCH

The relationship between health locus of control and lifestyle counselling practices among healthcare professionals: a cross-sectional study

Sağlık kontrol odağı ile sağlık çalışanları arasındaki yaşam tarzı danışmanlığı uygulamaları arasındaki ilişki: kesitsel bir çalışma

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Abstract

Purpose: This study aimed to evaluate the relationship between health locus of control (LOC), healthy lifestyle behaviours, and lifestyle counselling practices among healthcare professionals.

Materials and Methods: This cross-sectional study included 247 physicians and 267 nurses selected through systematic sampling from healthcare professionals at a tertiary hospital. Data were collected via Multidimensional Health Locus of Control Scale Form A and a data collection form. Participants were asked whether they practiced five healthy lifestyle behaviours (not smoking, dedicating at least 10 minutes a day to stress management, maintaining ideal weight, consuming 5 servings of fruit and/or vegetables daily, and exercising for at least 150 minutes weekly) and whether they would recommend them to their patients.

Results: A total of 514 healthcare professionals participated in the study (mean age: 33.88 ± 9.24 years; 68.5% were female). Of the participants, 25.1% reported smoking; 23.9% reported never exercising; 24.5% reported never reaching their ideal weight; and 29.8% reported not consuming five servings of fruits and vegetables daily. The frequency with which these were recommended to patients was found to be 60.5% for quitting smoking; 33.9% for stress management; 32.3% for physical exercise; 19.8% for weight control; and 14.4% for fruit and vegetable consumption. A significant positive correlation was established between practicing healthy behaviours and frequency of clinical recommendations. "Internal" LOC was significantly associated with both greater personal adherence to healthy habits (excluding smoking and stress management) and higher frequency of counselling patients on healthy lifestyle behaviours (excluding stress management).

Öz

Amaç: Bu çalışma, sağlık çalışanları arasında sağlık kontrol odağı (LOC), sağlıklı yaşam tarzı davranışları ve yaşam tarzı danışmanlığı uygulamaları arasındaki ilişkiyi değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem: Bu kesitsel çalışmaya, üçüncü basamak bir hastanedeki sağlık çalışanları arasından sistematik örnekleme yöntemiyle seçilen 247 hekim ve 267 hemşire dahil edildi. Veriler, Çok Boyutlu Sağlık Kontrol Odağı Ölçeği Form A ve bir veri toplama formu aracılığıyla toplandı. Katılımcılara, beş sağlıklı yaşam tarzı davranışını (sigara içmemek, günde en az 10 dakika stres yönetimine ayırmak, ideal kiloyu korumak, günde 5 porsiyon meyve ve/veya sebze tüketmek ve haftada en az 150 dakika egzersiz yapmak) uygulayıp uygulamadıkları ve bunları hastalarına tavsiye edip etmedikleri soruldu.

Bulgular: Çalışmaya toplam 514 sağlık çalışanı katıldı (ortalama yaş: 33,88 ± 9,24 yıl; %68,5'i kadın). Katılımcıların %25,1'i sigara içtiğini; %23,9'u hiç egzersiz yapmadığını; %24,5'i ideal kilolarına hiç ulaşamadığını; ve %29,8'i günde beş porsiyon meyve ve sebze tüketmediğini bildirdi. Bu davranışların hastalara önerilme sıklığı, sigarayı bırakma için %60,5; stres yönetimi için %33,9; fiziksel egzersiz için %32,3; kilo kontrolü için %19,8; ve meyve ve sebze tüketimi için %14,4 olarak bulundu. Sağlıklı davranışların uygulanması ile klinik önerilerin sıklığı arasında anlamlı bir pozitif korelasyon tespit edildi. "İçsel" kontrol odağı, hem sağlıklı alışkanlıklara (sigara içme ve stres yönetimi hariç) kişisel bağlılığın artması hem de hastalara sağlıklı yaşam tarzı davranışları (stres yönetimi hariç) konusunda danışmanlık yapma sıklığının artmasıyla anlamlı şekilde ilişkiliydi.

Sonuç: Sağlık çalışanlarının sağlık kontrol odağı, hem kendi sağlıklı yaşam tarzı davranışlarında hem de bu davranışları hastalarına önermelerinde önemli bir faktör

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Conclusion: Healthcare professional's health LOC appears to be a significant factor, both in their own healthy lifestyle behaviours and in recommending these behaviours to their patients. One way to address the implementation gap in lifestyle medicine could be to focus on developing internal LOC orientation among healthcare professionals.
Keywords: Healthy lifestyle behaviours, health locus of control, healthcare professionals, patient counselling

gibi görünmektedir. Yaşam tarzı tıbbındaki uygulama açığını gidermenin bir yolu, sağlık çalışanları arasında içsel kontrol odağı yönelimini geliştirmeye odaklanmak olabilir.

Anahtar kelimeler: Sağlıklı yaşam tarzı davranışları, sağlık kontrol odağı, sağlık profesyonelleri, hasta danışmanlığı

INTRODUCTION

Despite significant advancements in medical treatments, the global burden of non-communicable diseases (NCDs)-including cardiovascular diseases, diabetes, cancer, and neurodegenerative disorders-continues to escalate[1,2]. A profound paradox exists in modern medicine: while the majority of these conditions are attributed to modifiable lifestyle choices such as diet, physical activity, and tobacco use, the practical implementation of preventative behaviours remains alarmingly low[3,4]. Indeed, the field of lifestyle medicine has emerged to bridge this gap, utilizing evidence-based therapeutic approaches to prevent, treat, and even reverse chronic illness[5]. However, a critical barrier to progress is that even healthcare professionals (HCPs) often fail to adhere to the healthy behaviours they are trained to prescribe[6,7]. This discrepancy is more than a personal health concern; it is a clinical one. Because HCPs serve as a vital role model, their personal health behaviours are positively correlated with their willingness to recommend lifestyle changes to patient[8,15]. When a HCP's personal habits diverge from their professional advice, their clinical credibility is diminished, making it harder to deliver effective, persuasive medical guidance[16].

To address this implementation gap, it is essential to understand the underlying psychological determinants of health behaviour. A central concept in this domain is the Locus of Control (LOC). Originating from Social Learning Theory, LOC theory captures an individual's expectations regarding their over life outcomes. LOC is conceptualized as a continuum ranging from internal control-attributing outcomes to personal actions-to external control-attributing outcomes to outside forces. It is expanded into the Multidimensional LOC, dividing external control into two distinct sub-dimensions: powerful others (authority figures) and chance (fate or luck). Initially applied to personality, education, and vocational settings, LOC was later adapted for health psychology through the Multidimensional Health Locus of Control (HLOC) scale. HLOC assesses whether individuals believe their health status depends on their own choices (internal) or on external agents such as healthcare providers, higher powers, or chance[17-19]. Across health research, LOC is closely linked to behaviours such as dietary habits, physical activity, preventive screenings, medical adherence and physician trust. Individuals with a high internal HLOC are generally more proactive in maintaining healthy habits, as they perceive a direct link between their effort and their physical well-being. Conversely, those with an external orientation may feel less agency over their health, potentially leading to lower adherence to lifestyle interventions[19-23].

Although LOC is recognized as a fluid, culturally, and psychosocially driven construct, limited research explores how healthcare professionals' HLOC influences their own health behaviours and, consequently, their practice of recommending these healthy behaviours to patients within the Turkish context. To address this gap, this study aimed to evaluate the relationship between HLOC, healthcare professionals' healthy lifestyle behaviours, and their lifestyle counselling practices. The research questions guiding this study were threefold: first, whether a significant relationship exists among HCPs' HLOC, their personal healthy lifestyle behaviours, and their clinical lifestyle counselling practices; second, whether HCPs with an internal HLOC orientation report higher levels of personal healthy lifestyle behaviours compared to those with external HLOC orientations; and third, whether HCPs with an internal HLOC orientation demonstrate higher levels of lifestyle counselling practices in patient care than their external counterparts.

While prior research has extensively documented the connection between HLOC and health habits, this study addresses a critical gap by shifting focus to

HCPs as role models and clinical advisors within a specific cultural setting. By examining the dual impact of HLOC-evaluating how HCPS's internal/external control beliefs dictate their personal wellness while simultaneously driving their active provision of lifestyle counseling-this research bridges individual health psychology with clinical practice. To empirically test these relationships, the following hypotheses were formulated:

H_1: There is a significant association between HCPs HLOC, their personal healthy lifestyle behaviours, and their clinical lifestyle counseling practices.

H_2: HCPs with an internal HLOC report significantly higher levels of personal healthy lifestyle behaviours than those with external HLOC orientations.

H_3: HCPs with an internal HLOC report significantly higher levels of lifestyle counseling practices than those with external HLOC orientations.

MATERIALS AND METHODS

Study design and sample

This cross-sectional study was conducted between May and July 2016 at the Balcalı Hospital of Çukurova University Faculty of Medicine, a tertiary-care university hospital in Adana, Türkiye.

The target population for this study consists of two independent groups: physicians (N=660) and nurses (N=863) working at a healthcare facility. To determine the required minimum sample sizes, the finite population sampling formula was applied separately to each group. Z score was taken as 1.96 and p was taken as 0.50 and deviation amount (d) was taken as 0.05. The required minimum sample size (n) was determined to be 244 for physicians and 266 for nurses.

Healthcare professionals were eligible for inclusion if they were physicians or nurses working at Çukurova University Faculty of Medicine Balcalı Hospital during the study period, were employed in either the internal medicine or surgical departments, were actively working at the time of data collection, and were willing to participate by providing written informed consent. Individuals who had retired, were no longer actively employed, or declined participation were excluded. When an eligible participant declined participation, the next individual on the list was invited to maintain the target sample size. A total of 78 individuals were replaced because they had retired, were no longer actively employed, or declined participation. The study was completed with 247 physician and 267 nurse participants.

Procedure

Prior to the data collection, formal approval was obtained from the Çukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee and the hospital administration (01.04.2016 - Decision No: 16). All procedures involving human participants were conducted in accordance with the ethical standards of the institutional and/or national research committee and with the principles of the Declaration of Helsinki and its subsequent amendments. Written informed consent was obtained from all participants.

Data were collected using a two-part instrument consisting of a researcher-developed structured sociodemographic data collection form and the Multidimensional Health Locus of Control (MHLC) Scale Form A.

The first part of the survey created by the researchers asked participants about their age, gender, marital status, occupation, department they work in.

The second part of the survey included questions related to healthy lifestyle behaviours and practices. Healthy lifestyle behaviours were defined as follows, based on the mnemonic device : Healthy lifestyle behaviours are defined as follows, based on "0, 5, 10, 30, 150 mnemonic"[24]:

(0) Non-smoking status

(5) Daily consumption of at least 5 servings of fruits and vegetables.

(10) Engagement in at least 10 minutes of daily stress management.

(30) Maintenance of a Body Mass Index (BMI) below 30 kg/m^2.

(150) Performance of at least 150 minutes of brisk walking (or equivalent physical) activity per week.

Participants were asked to report both their personal practice of each healthy lifestyle behaviour and the frequency with which they recommended these behaviours to their patients. For each of the five lifestyle domains (non-smoking, fruit and vegetable

consumption, stress management, weight maintenance, and physical activity), responses were recorded using a five-point Likert scale ranging from 1 (never) to 5 (always). Higher scores indicated greater adherence to the respective healthy lifestyle behaviour and more frequent recommendation of that behaviour in clinical practice.

The Multi-Dimensional Health Locus of Control Scale (MHLC)

MHLC Form A which was developed by Wallston et al. is used to determine whether individuals have internal or external control over their health behaviours, or whether they adopt a fatalistic approach[18]. The validity and reliability of MHLC Form A in Turkish was demonstrated by a study conducted by Güzel et al. on 275 individuals, in which Cronbach's alpha values ranged from 0.74 to 0.78[25]. The MHLC scale, a 6-option Likert-type scale consisting of 18 items, is divided into three groups of six items each to assess perceptions of internal and external locus of control and fatalistic approach. Internal score is the sum of the scores of questions 1, 6, 8, 12, 13, and 17; external score (Chance) is the sum of the scores of questions 2, 4, 9, 11, 15, and 16; and strong other scores are the sum of the scores of questions 3, 5, 7, 10, 14, and 18. Averages related to perceived locus of control levels are evaluated between 6 and 36. Whichever section has a higher score is considered to be the health locus of control.

All data were collected by a physician who was a member of the research team through face-to-face to ensure data quality and clarify participant queries.

Statistical analysis

Statistical analyses were performed using IBM SPSS 21 (Armonk, NY. IBM Corp.). Descriptive statistics are reported as mean ± standard deviation for continuous data and as frequencies and percentages for categorical variables. The Kolmogorov–Smirnov test was performed to evaluate the normality of continuous variables. Due to the non-normal distribution of several key continuous variables, non-parametric tests were used for group comparisons. The Mann-Whitney U test was used for comparing two groups (gender, marital status, department, profession), and the Kruskal-Wallis test was used for comparisons involving more than two groups (age groups, LOC groups). The Spearman rank correlation coefficient was applied to examine the strength and direction of the relationship between variables. Categorical variables were analysed using the chi-square test (LOC groups*gender, LOC*age etc.). In all analyses, a p-value < 0.05 was considered statistically significant.

RESULTS

The study included 514 healthcare professionals with a mean age of 33.88±9.24 years. The majority of sample was female (68.5%), married (56.6%), and worked within internal medicine department (64.6%). Approximately half of the participants were physicians (48.1%), and 44.9% of the participants perceived their economic status as "good".

Nearly a quarter reported smoking regularly (25.1%); never exercising (23.9%), and never at their ideal weight (24.5 %.) Dietary habits were the most neglected, with 29.8% of professionals failing to consume the recommended five servings of fruits and vegetables daily. Regarding clinical practice, the frequency of recommending these behaviours to patients varied. Among the interventions, smoking cessation was the most frequently recommended (60.5%), followed by stress management (33.9%), physical exercise (32.3%), weight maintenance (19.8%), and nutrition focusing on fruits and vegetables (14.4%).

An analysis of sociodemographic characteristics revealed significant correlations regarding both the personal practice and clinical recommendation of healthy lifestyle behaviours (Table 1). A positive correlation was observed between age and health consciousness; as participants' age increased, there were significant improvements in the practice of non-smoking behaviour and regular exercise, as well as a higher frequency of recommending weight management to patients ($p<0.05$).

Female participants demonstrated higher adherence ton on-smoking and were more likely to promote fruit and vegetable consumption. Male participants scored significantly higher in the clinical recommendation of non-smoking, weight maintenance, and physical exercise.

When comparing by profession, physicians scored significantly higher than nurses in the clinical recommendation of non-smoking ($p=0.01$) and in the clinical recommendation of exercise ($p<0.01$). Conversely, nurses demonstrated a greater tendency to promote fruit and vegetable consumption.

Participants from internal medicine reported higher scores for both practicing and recommending fruit/vegetable consumption, weight maintenance, and exercise compared to their colleagues from surgical units. (Table 1).

Table 1. Comparison of healthy lifestyle practice and patient recommendations among participants, by sociodemographic characteristics (N=514)

Variable			Non-smoking		Fruit and vegetable consumption		Stress management		Maintaining ideal body weight		Engaging in regular physical exercise	
		n (%)	Practice M±SD	Recommendation M±SD	Practice M±SD	Recommendation M±SD	Practice M±SD	Recommendation M±SD	Practice M±SD	Recommendation M±SD	Practice M±SD	Recommendation M±SD
Age (years)	≤25	85 (16.5)	1.72 ±1.31	4.25±1.16	2.39± 1.09	2.84±1.31	2.12± 0.94	2.60±1.20	3.29± 1.31	3.29±1.16	2.40± 1.33	2.99±1.35
	26-35	243 (47.3)	2.07± 1.45	4.07±1.19	2.28± 1.08	2.99±1.31	2.13 ±1.05	2.66±1.31	2.98± 1.28	3.63±1.23	2.45± 1.31	3.44±1.31
	36-45	118(23.0)	2.25± 1.51	4.37±1.06	2.34± 1.09	3.06±1.46	2.37 ±1.30	2.67±1.22	3.05± 1.23	3.75±1.20	2.48± 1.31	3.48±1.40
	>45	68 (13.2)	2.40± 1.75	4.43±0.91	2.54± 1.17	3.29±1.41	2.00 ±1.07	2.85±1.35	2.99± 1.19	3.99±1.13	2.66± 1.37	3.81±1.20
p**			0.019	0.033	0.389	0.214	0.255	0.643	0.211	0.003	0.600	0.003
Gender	Female	352 (68.5)	4.09± 1.41	4.11±1.18	3.35± 1.38	3.07±1.37	2.90± 1.35	2.70±1.24	3.69± 1.20	3.55±1.24	3.37± 1.29	3.31±1.38
	Male	162 (31.5)	3.53± 1.71	4.44±0.98	2.94± 1.48	2.91±1.35	2.88± 1.49	2.64±1.36	3.71± 1.33	3.85±1.12	3.59± 1.34	3.67±1.22
p*			0.001	0.002	0.004	0.226	0.751	0.353	0.644	0.014	0.064	0.007
Marital status	Married	291 (56.6)	3.95± 1.48	4.27±1.09	3.27± 1.43	3.04±1.38	2.82± 1.43	2.66±1.27	3.62± 1.24	3.65±1.21	3.36± 1.32	3.50±1.33
	Single	223 (43.4)	3.88± 1.59	4.15±1.19	3.15± 1.41	3.00±1.34	3.00± 1.34	2.71±1.28	3.80± 1.24	3.64±1.21	3.53± 1.29	3.33±1.35
p*			0.889	0.279	0.343	0.775	0.103	0.565	0.077	0.958	0.139	0.174
Profession	Physician	247 (48.1)	3.89± 1.58	4.41±0.98	3.07± 1.42	3.06±1.37	2.95± 1.43	2.77±1.36	3.81± 1.25	3.88±1.14	3.45± 1.28	3.74±1.21
	Nurse	267 (51.9)	3.94± 1.48	4.04±1.23	3.36± 1.41	2.99±1.36	2.85± 1.36	2.60±1.18	3.60± 1.23	3.43±1.24	3.42± 1.34	3.13±1.39
p*			0.945	0.001	0.021	0.530	0.463	0.565	0.034	<0.001	0.881	<0.001
Department	Medical	332 (64.6)	3.93± 1.49	4.19±1.17	3.33± 1.41	3.18±1.35	2.92± 1.38	2.76±1.30	3.80± 1.20	3.77±1.17	3.55± 1.29	3.59±1.29
	Surgical	182 (35.4)	3.89± 1.60	4.27±1.06	3.02± 1.43	2.73±1.35	2.86± 1.42	2.53±1.21	3.52± 1.31	3.41±1.26	3.24± 1.32	3.13±1.38
p*			0.986	0.574	0.020	<0.001	0.613	0.071	0.025	0.001	0.010	<0.001

*Mann-Whithney U test. **Kruskal-Wallis test

The mean internal control score of the participants was 24.77±5.08 (10-36), which is higher than the mean chance control score of 20.32±3.75 (10-31), and the mean powerful others control score of 20.12±4.43 (6-36). Overall, 70.2% of the healthcare professionals in this study demonstrated a predominant internal LOC regarding their health.

Male participants exhibited a significantly higher ratio of internal HLOC compared to female participants (p=0.004). A significant difference was noted between clinical specialties (p=0.009). While internal medicine staff trended toward internal beliefs, the distribution of chance and powerful others (external) HLOC was more pronounced among working in surgical branches. No significant differences in HLOC distribution were found according to age, marital status, or specific occupational groups (Table 2).

A generally weak-to-moderate positive correlation was established between the participants' personal scores for practicing healthy lifestyle behaviours and their scores for recommending those same behaviours to patients. A weak negative correlation was found between smoking and other healthy lifestyle behaviours. A moderate to good positive correlation was observed between recommending any health behaviour and recommending others (Table 3).

Table 2. Distribution of multidimensional health locus of control scores among participants, by sociodemographic characteristics (N=514)

Characteristics		Internal n (%)	Chance n (%)	Powerful others n (%)	p*
Age (years)	≤25	65(18.0)	13(15.3)	7(10.3)	0.339
	26-35	177(49.0)	36(42.4)	30(44.1)	
	36-45	77(21.3)	22(25.9)	19(27.9)	
	>45	42(11.6)	14(16.5)	12(17.6)	
Gender	Female	234(66.5)	71(20.2)	47(13.4)	0.004
	Male	127(78.4)	14(8.6)	21(13.0)	
Marital status	Married	195(67.0)	54(18.6)	42(14.4)	0.184
	Single	166(74.4)	31(13.9)	26(11.7)	
Profession	Physician	179(72.5)	33(13.4)	35(14.2)	0.169
	Nurse	182(68.2)	52(19.5)	33(12.4)	
Department	Medical	246(74.1)	43(13.0)	43(13.0)	0.009
	Surgical	115(63.2)	42(23.1)	25(36.8)	
Total		361 (70.2)	85 (16.5)	68 (13.2)	

* Chi-square test

Table 3. Correlation between participants' personal healthy lifestyle behaviours and clinical recommendations to patients

	Smoking	Fruit and vegetable consumption	Stress management	Being at ideal body weight	Exercise	Recommend not smoking	Suggesting fruits and vegetables	Recommend stress management	Recommending maintaining ideal weight	Recommend exercise
Smoking	1.000	-.062	-.095*	-.130**	-.099*	-.100*	.059	-200**	.059	.092*
Fruit and vegetable consumption		1.000	0.127**	0.430**	.289**	.077	.386**	.191**	.239**	.292**
Stress management			1.000	.150**	.249**	.061	.075	.289**	.036	.076
Being at ideal body weight				1.000	.374**	.181**	.264**	.261**	.275**	.259**
Exercise					1.000	.098*	.138**	.170**	.202**	.186**
Recommend not smoking						1.000	.346**	.322**	.434**	.403**
Suggesting fruits and vegetables							1.000	.455**	.636**	.700**
Recommend stress management								1.000	.344**	.430**
Recommending maintaining ideal weight									1.000	.734**
Recommend exercise										1.000

Spearman correlation analysis test; *Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level.

Table 4 shows a comparison of participants' locus of health control scores based on their practice/recommendation of healthy lifestyle behaviours. The results demonstrate that internal HLOC is significantly associated with both personal and professional health engagement. Participants with a predominant internal HLOC orientation achieved significantly higher scores in following areas ($p<0.05$); higher rates of personal adherence to healthy lifestyle behaviours except non-smoking and stress management and a significantly greater frequency of counselling patients on all healthy lifestyle behaviours except stress management.

The study further examined how healthcare professionals perceive their own efficacy and the relative value of lifestyle counselling in clinical practice (Table 5). It was found that the perception of competence increased with age. The perception of the importance of counselling for patients was found to be significantly higher among physicians, and the perception of competence in providing counselling was significantly higher among those working in internal medicine.

Table 4. Comparison of healthy lifestyle practice and recommendation scores between participants with locus of control orientations

Practice/recommendation of healthy lifestyle behaviours		Internal Mean ±SD	Chance Mean ±SD	Powerful others Mean ±SD	p*
Non-smoking	Practice	2.20±1.55	1.87±1361	1.81±1.26	0.147
	Recommendation	4.31±1.08	4.01±1.16	3.97±1.31	0.020
Fruit and vegetable consumption	Practice	2.47±1.13	2.11±1.00	2.01±0.93	0.001
	Recommendation	3.18±1.37	2.69±1.25	2.60±1.30	<0.001
Stress management	Practice	2.12±1.08	2.31±1.25	2.24±0.97	0.346
	Recommendation	2.69±1.29	2.79±1.28	2.49±1.21	0.350
Maintaining ideal body weight	Practice	3.12±1.28	2.92±1.28	2.82±1.13	0.087
	Recommendation	3.79±1.18	3.22±1.23	3.40±1.21	<0.001
Engaging in regular physical exercise	Practice	2.56±1.34	2.13±1.19	2.47±1.29	0.021
	Recommendation	3.61±1.34	2.93±1.25	3.06±1.25	<0.001
Perceived competence in counselling		3.80±0.83	3.54±0.82	3.56±0 .65	0.007
Perceived importance of counselling for patients		4.27±0.71	3.95±0.68	4.21±0.63	<0.001

* Kruskal-Wallis Test

Table 5. Comparison of participants' perceived competence and the perceived importance of lifestyle interventions, by sociodemographic characteristics

Variable		Perceived competence in counselling Mean ±SD	Perceived importance of counselling for patients Mean ±SD
Age (years)	≤25	3.53± 0.89	4.14±0.78
	26-35	3.71±0.80	4.19±0.66
	36-45	3.81±0.76	4.23±0.67
	>45	3.85±0.815	4.32±0.80
	p**	0.046	0.209
Gender	Female	3.73±0.82	4.21±0.68
	Male	3.70±0.80	4.21±0.75
	p*	0.699	0.701
Marital status	Married	3.73±0.81	4.21±0.67
	Single	3.72±0.82	4.22±0.75
	p*	0.906	0.575
Profession	Physician	3.73±0.81	4.27±0.73
	Nurse	3.72±0.82	4.15±0.67
	p*	0.844	0.017
Department	Medical	3.77±0.83	4.22±0.72
	Surgical	3.64±0.78	4.20±0.68
	p*	0.044	0.655

*Mann-Whitney U test. **Kruskal-Wallis test

DISCUSSION

The primary objective of this study was to evaluate the relationship between healthcare professionals' personal healthy lifestyle behaviours, their clinical recommendation practices, and their HLOC. Our results demonstrate a significant association between HLOC, personal healthy lifestyle behaviours, and lifestyle counselling practices. Healthcare professionals with an internal HLOC orientation reported higher levels of healthy behaviours and

counselling practices than those with external HLOC orientations.

In a study by Frank et al. with 1233 physicians and nurses, it was found that 70% of the participants had at least one behavioural risk factor (obesity, low physical activity, smoking, and risky alcohol consumption); most participants were satisfied with their health habits and did not consider behavioural change[26]. These data, supporting previous studies, are noteworthy for highlighting the critical gap between knowledge and action needed to reduce the global burden of disease.

Our findings revealed a notable "implementation gap" among healthcare professionals, particularly regarding nutrition and weight maintenance. While smoking cessation was the most frequently recommended behaviour (60.5%), dietary advice was the least frequent (14.4%). This discrepancy may be explained by the "Role Model Theory". As noted in our results, there is a moderate positive correlation between practicing a behaviour and recommending it. When HCPs struggle with their own dietary habits-evidenced by the %29.8 who fail to consume adequate fruits and vegetables-they may experience cognitive dissonance or perceived loss of credibility, leading them to avoid discussing these topics with patients. Similar studies have shown that healthcare professionals who eat healthily, exercise regularly, and do not smoke are more likely to recommend healthy lifestyle behaviours to patients[12,15,26-28]. In the study by Hung et al., it was found that doctors who did not smoke and exercised at least one day a week made more recommendations for healthy lifestyles than the group who smoked and did not exercise[27]. A study conducted in the UK found that 28.6% of doctors reported engaging in physical activity at least 5 days a week according to guidelines, while 23.5% limited themselves to only 2 days a week. It was found that doctors with higher awareness and who exercised regularly were more likely to recommend physical activity[29].

The most critical finding of this study is the dominance of the Internal Locus of Control among 70.2% of participants and its direct correlation with clinical advocacy. In behavioural psychology, an internal orientation is a prerequisite for self-efficacy. Our data clearly show that those who believe health is a result of their own actions achieve higher score in both personal adherence ant patient counselling. Interestingly, we observed that non-surgical branches exhibited higher Internal HLOC, better practice/recommendation score compared those in surgical branches, who trended more toward "Chance" or "Powerful Others" orientations. This suggest that nature of the clinical environment may shape the provider's psychological framework. Healthcare professionals working in internal medicine departments demonstrated higher Internal HLOC scores and more favourable counselling practices than those working in surgical departments. One possible explanation may be the greater emphasis on chronic disease management and preventive care in internal medicine settings. However, further studies are needed to better understand the mechanisms underlying this association. Consistent with our findings Ulamış and Özmen conducted a study among intensive care and operating room nurses, and they reported that internal HLOC remained the primary orientation, but "powerful others" scored highly as a secondary orientation[30]. This suggests that acute, team-based settings, HCPs balance a sense of personal responsibility with a strong reliance on the expertise of the medical hierarchy, where as the "Chance" orientation remains consistently low across various clinical contexts.

Our results indicate that perception of competence in lifestyle counselling increases with age. This may be explained by the increased awareness of potentially risky behaviours and professional experience associated with age. Studies in the literature also show that older age and increased professional experience increase the likelihood of providing lifestyle counselling[31]. This is also a vital insight for healthcare administration. While younger physicians and nurse possess the medical knowledge, they may lack the communication confidence or "behavioural coaching" experience that develops over time. This is further complicated by the finding that doctors perceived lifestyle counselling as more "important" than nurses, whereas nurses felt more component in nutritional counselling. This highlights a need for interprofessional collaboration: physicians may set the "importance" of the intervention, but nurses may be better positioned to provide the practical, "component" dietary guidance.

The "Advocacy Cluster" identified in our correlation analysis (Table 3) suggest that lifestyle counselling is rarely an isolated event. Professionals who recommend one healthy behaviour are likely to recommend them all. Conversely, the negative correlation between smoking and other healthy

behaviours suggests that high-risk personal habits create a barrier effect, effectively silencing the provider on multiple fronts of preventative medicine.

Several limitations must be acknowledged: This was a cross-sectional study, which allows for the identification of correlations but precludes the establishment of casual relationship. The data rely on self-reporting, which introduces the possibility of social desirability bias-where participants may over-report healthy behaviours or clinical recommendations. Although systematic sampling was used, the practice of replacing participants who refused with the next person on the list (to maintain sample size) could introduce a slight selection bias, as those who agreed to participate might inherently be more health-conscious than those who decline. Furthermore, the study was conducted at a single hospital. The specific institutional culture, workload, and available sources for lifestyle medicine in this setting may differ from other hospitals.

Despite these limitations, this study remains one of the few to explore the intersection of personal health beliefs and clinical practice among both physicians and nurses, offering a unique psychological perspective on the implementation of lifestyle medicine.

In conclusion, this study demonstrates that improving patient outcome through lifestyle medicine requires more than just clinical guidelines; it require supporting the psychological health and personal habits of the providers themselves. By fostering an Internal Locus of Control and increasing perceived competence through targeted training-particularly for younger professionals and those in surgical branches-healthcare system can empower healthcare professionals to become more effective clinical role models. The study can be expanded to include healthcare professionals working in different sociocultural regions and at different levels of healthcare service. While the MHLC Scale is a validated tool, it measures general health beliefs. Future research may benefit from using more specific tools to examine in more detail the difference between healthcare professionals' beliefs about their own health and their beliefs about their ability to change patient behaviour.

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REFERENCES

1. World Health Organization. Noncommunicable diseases 2025. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases. (Accessed 11.02.2026).
2. Murray CJL, Aravkin AY, Zheng P, Abbafati C, Abbas KM, Abbasi-Kangevari M et al. Global burden of 87 risk factors in 204 countries and territories, 1990-2019: a systematic analysis for the global burden of disease study 2019. Lancet. 2020;396:1223–49.
3. Li Y, Xia -F, Geng TT, Tu ZZ, Zhang YB, Yu HC et al. Trends in self-reported adherence to healthy lifestyle behaviors among US adults, 1999 to March 2020. JAMA Netw Open. 2023;6:e2323584.
4. Zhang L, Shen Y, Tang Y, Wu Y, Chen D, Liang Z et al. Trends in prevalence of health and cardiovascular risk factors based on life's essential 8 among US adults, 2007–2020. Obesity. 2025;33:1756–64.
5. Lippman D, Stump M, Veazey E, Guimarães ST, Rosenfeld R, Kelly JH et al. Foundations of lifestyle medicine and its evolution. Mayo Clin Proc Innov Qual Outcomes. 2024;8:97–111.
6. Sofia Razzakh S, Singh R, Uddin Khan B, Hassan N. The health-promoting lifestyle behaviors of healthcare employees in Qatar - a cross-sectional comparative study. Qatar Med J. 2024;2024:74.
7. Ramot S, Tal O, Rosenbloom T. Comparison of health behaviors of healthcare workers and the general public in Israel: a cross-sectional survey. Int J Environ Res Public Health. 2024;21:20240227.
8. Severin R, Arena R. A culture of health promotion in healthcare: can't pour from an empty cup. Prog Cardiovasc Dis. 2025;90:45–50.
9. Dubnov-Raz G, Berry E, Shemer O, Constantini N. Who will take care of the caretaker? lifestyle recommendations for physicians. Harefuah. 2011;150:583–7.
10. Holtzclaw L, Arlinghaus KR, Johnston CA. The health of health care professionals. Am J Lifestyle Med. 2021;15:130–2.
11. Frank E, Dresner Y, Shani M, Vinker S. The association between physicians' and patients' preventive health practices. CMAJ. 2013;185:649–53.

12. Oberg EB, Frank E. Physicians' health practices strongly influence patient health practices. J R Coll Physicians Edinb. 2009;39:290–1.
13. Fominienė VB, Fominaitė M, Sipavičienė S. Physical activity knowledge and personal habits with recommendations for patients: self-assessment by primary care physicians. Healthcare (Basel). 2024;12:1131.
14. McCormick SJ, Smith-Holmquist N, Benton MJ. Personal health behaviors and physical activity and nutrition counseling by nurse practitioners: an online survey. J Am Assoc Nurse Pract. 2023;35:794–801.
15. Lobelo F, de Quevedo IG. The evidence in support of physicians and health care providers as physical activity role models. Am J Lifestyle Med. 2016;10:36–52.
16. Hash RB, Munna RK, Vogel RL, Bason JJ. Does physician weight affect perception of health advice? Prev Med. 2003;36:41–4.
17. Mozafari S, Yang A, Talaei-Khoei J. Health locus of control and medical behavioral interventions: systematic review and recommendations. Interact J Med Res. 2024;13:e52287.
18. Wallston KA. The validity of the multidimensional health locus of control scales. J Health Psychol. 2005;10:623–31.
19. Rodriguez A, Delbourgo Patton C, Stephenson-Hunter C. Impact of locus of control on patient–provider communication: A systematic review. J Health Commun. 2023;28:190–204.
20. Botha F, Dahmann SC. Locus of control, self-control, and health outcomes. SSM Popul Health. 2024;25:101566.
21. Dogonchi M, Mohammadzadeh F, Moshki M. Investigating the relationship between health locus of control and health behaviors: A systematic review. Open Public Health J. 2022;15:1.
22. Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. Proc Natl Acad Sci U S A. 2013;110:5797–801.
23. Cheng C, Cheung MW, Lo BC. Relationship of health locus of control with specific health behaviours and global health appraisal: a meta-analysis and effects of moderators. Health Psychol Rev. 2016;10:460–77.
24. CP KK. Lifestyle interventions and behavior change. In Textbook of Family Medicine 8th ed. (Eds RE Rakel, DP Rakel):100-11. Philadelphia, Elsevier Saunders, 2011.
25. Güzel A, Turan S, Üner S. Turkish validity and reliability of multidimensional health locus of control scale form A. Int J Nurs Pract. 2020;26:e12813.
26. Frank E, Wright EH, Serdula MK, Elon LK, Baldwin G. Personal and professional nutrition-related practices of US female physicians. Am J Clin Nutr. 2002;75:326–32.
27. Hung OY, Keenan NL, Fang J. Physicians' health habits are associated with lifestyle counseling for hypertensive patients. Am J Hypertens. 2013;26:201–8.
28. Belfrage ASV, Grotmol KS, Tyssen R, Moum T, Finset A, Isaksson Rø K, et al. Factors influencing doctors' counselling on patients' lifestyle habits: a cohort study. BJGP Open. 2018;2:bjgpopen18X101607.
29. Cuthill JA, Shaw M. Questionnaire survey assessing the leisure-time physical activity of hospital doctors and awareness of UK physical activity recommendations. BMJ Open Sport Exerc Med. 2019;5:e000534.
30. Ulamış B, Özmen D. Bir kamu hastanesinde çalışan hemşirelerin sağlıklı yaşam biçimi davranışları ile sağlık kontrol odağı arasındaki ilişki. Tepecik Eğt Hast Derg. 2014;24:119-125.
31. Znyk M, Polańska K, Wojtysiak P, Szulc M, Bąk-Romaniszyn L, Makowiec-Dąbrowska T et al. Predictors of counselling related to a healthy lifestyle carried out by a general practitioner. Int J Environ Res Public Health. 2019;16:4475.