

EVALUATION OF INDIVIDUALS' HEALTH BELIEF ATTITUDES TOWARD EXERCISE

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ABSTRACT

This study aims to evaluate individuals' health belief attitudes toward exercise. The study population consisted of literate individuals aged 18 to 65 residing in the city center of Çanakkale; with a sample of 415 volunteers who agreed to participate. Data were collected using a descriptive information form and the health belief attitudes scale toward exercise. SPSS 27 was used for data analysis. Although 97.3% of participants believed that exercise is beneficial, only 38.6% reported exercising regularly. The total scale score of participants aged 41 to 50 (105.47 ± 24.34) was significantly lower than that of other age groups. Married participants had significantly lower health belief attitude scores toward exercise (110.38 ± 23.03) compared to single participants. The study also found that higher education levels were associated with more positive health belief attitudes. Participants whose income was lower than their expenses had lower scores (110.56 ± 22.40). Total scores were significantly higher among those who exercised regularly and believed in the benefits of exercise. The study recommends implementing awareness-raising initiatives through intersectoral collaboration, developing risk prediction tools for early detection of chronic diseases, leveraging digital health technologies with the support of physiotherapists to educate the public, and incorporating green spaces and walking areas suitable for exercise into urban planning.

INTRODUCTION

Chronic diseases are conditions that arise from a combination of genetic, physiological, environmental, and behavioral factors (World Health Organization [WHO], 2024). In 2021, these diseases were responsible for at least 43 million deaths globally, with approximately 18 million occurring before the age of 70. Notably, over 70% of these deaths were reported in low- and middle-income countries (WHO, 2024). Among chronic diseases, cardiovascular diseases are the leading cause of death, followed by cancer, chronic respiratory diseases, and diabetes mellitus (WHO, 2024). The mortality rate from cardiovascular diseases in low- and middle-income countries is four times higher than in high-income countries (Yusuf et al., 2014).

According to the 2022 cause of death statistics from the Turkish Statistical Institute, circulatory system diseases, malignant neoplasms, respiratory system diseases, and diabetes are among the leading causes of death in Türkiye. The probability of premature mortality from the four major noncommunicable chronic diseases has been reported as 17.8% globally, 12.4% in

European Union member states, 11.8% in OECD countries, and 11.5% in Türkiye (Ministry of Health, 2024a).

Chronic diseases impose a heavy financial burden on healthcare systems. Globally, the cost of managing these conditions is projected to reach \$47 trillion by 2030 (Hacker, 2024). According to global burden of disease estimates, conditions such as ischemic heart disease, stroke, malignant neoplasms, chronic obstructive pulmonary disease, diabetes mellitus, neurological disorders, and chronic kidney failure consistently rank among the leading causes of years of life lost and disability-adjusted life years (Felisbino-Mendes et al., 2020; Gorum, Mesfin, Bedewi & Shewangizaw, 2020; Ministry of Health, 2024a; Ramesh & Kosalram, 2023;; Liu, Yin, Qi & Zhou, 2024; Thakur, Paika & Singh, 2020). The economic impact of overweight and obesity, estimated at 1.96 trillion dollars in 2020, is projected to exceed \$4 trillion by 2035 (World Obesity Federation, 2023). In addition to straining healthcare systems, chronic diseases impose a significant economic burden on households (Kazibwe, Tran & Annerstedt, 2021; Murphy et al., 2020; Verma, Kumar & Dash, 2021). As the prevalence of chronic diseases increases, productivity losses also rise, including job resignation, transitions to part-time work, absenteeism, and workplace accidents (Akhtar, Mohanty, Singh & Sen, 2022; Fouad et al., 2017; Lavikainen et al., 2024; Polanco, Oña, Sabariego & Pacheco Barzallo, 2024; Wang, Hwang, Huang, Chang & Wang, 2024). A study conducted across European countries found that individuals with chronic illnesses consistently reduced their weekly working hours compared to their healthy peers, resulting in an average annual productivity loss estimated at \$12.8 billion (Polanco et al., 2024).

Multiple risk factors are associated with the development of chronic diseases. According to the WHO, tobacco use, physical inactivity, alcohol consumption, unhealthy diets, and exposure to air pollution significantly increase the risk of mortality from chronic diseases (WHO, 2024). Additionally, environmental and lifestyle factors such as sleep disorders, stress, noise, and low socioeconomic status along with genetic factors have been identified as contributing risk factors (Abbott, Ward & Bowe, 2021; Kolb & Martin, 2017; Li et al., 2023; Livingstone, Peng et al., 2023; Said, Verweij & van der Harst, 2018). A study assessing chronic disease risk factors among adults in Türkiye reported a high average body mass index (BMI) and found that the prevalence of obesity, overweight, tobacco use, and alcohol consumption accounted for approximately 30%–40% of the total population. Moreover, these rates have been increasing over time, further exacerbating the chronic disease burden (Kaçmaz & Kaçmaz, 2024).

One of the key factors influencing chronic diseases is obesity, which has become increasingly prevalent in recent years (Cooper, Gupta, Moustafa & Chao, 2021; Sarma, Sockalingam & Dash, 2021). According to the World Obesity Federation 2023, it is projected that more than half of the world's population will be affected by overweight and obesity within the next 12 years, unless significant progress is made in global obesity prevention and treatment efforts. The same report also estimates that the global proportion of overweight or obese individuals ($\text{BMI} \geq 25 \text{ kg/m}^2$) across both sexes will increase from 38% in 2020 to 51% by 2035, while the obesity rate ($\text{BMI} \geq 30 \text{ kg/m}^2$) is expected to rise from 14% to 24% (World Obesity Federation, 2023). Studies have demonstrated a strong association between obesity and the incidence of chronic diseases in low- and middle-income countries (Asogwa et al., 2022; Çam & Sengül, 2024; Ford, Patel & Narayan, 2017; Tan et al., 2024; Teufel et al., 2021). Moreover, the treatment of obesity and its associated health outcomes imposes a significant economic burden, contributing to increased rates of absenteeism, presenteeism, early retirement, and premature mortality (World Obesity Federation, 2023).

Sedentary behavior and physical inactivity are key behavioral risk factors associated with increased mortality from chronic diseases and obesity (Çam & Sengül, 2024; Hacker, 2024; Kerr and Booth, 2022; WHO, 2024). According to the Ministry of Health's General Directorate of Public Health, Department of Healthy Nutrition and Active Life, physical activity is defined as any movement in daily life that involves the use of muscles and joints, leads to energy expenditure, increases heart and respiratory rates, and results in fatigue of varying intensity. Such activities include walking, running, jumping, cycling, swimming, squatting, standing up, and movements involving the head, torso, arms, and legs. Physical activity has numerous positive effects on physical, mental, and social health. Physically, it helps maintain muscle strength; regulate heart rhythm; preserve posture; balance the body's water, salt, and mineral levels; accelerate metabolism to prevent weight gain; increase respiratory capacity; reduce the risk of cardiovascular and cerebrovascular diseases; and lower the risk of early dementia and memory loss. Mentally and socially, it enhances positive thinking and improves stress management skills, contributes to the development of individuals who are confident and comfortable with their bodies due to its beneficial effects on muscles, bones, and joints and promotes feelings of well-being and happiness (Ministry of Health, 2024b).

Physical inactivity is a risk factor for many noncommunicable diseases, including premature death, coronary heart disease, stroke, hypertension, Type 2 diabetes, mental illnesses, dementia, neurological disorders, digestive system diseases, depression, and cancers of the bladder, breast, colon, endometrium, esophagus, stomach, and kidney (Blond, Brinklöv, Ried-

Larsen, Crippa & Grøntved, 2020; Katzmarzyk, Friedenreich, Shiroma & Lee, 2022; Silva et al., 2020; Min et al., 2020; Zelenović et al., 2022). Regular physical activity has been shown to reduce the development and progression of chronic diseases and disabilities, increase life expectancy, decrease the risk of premature mortality, and provide numerous other health benefits (Bauman, Merom, Bull, Buchner & Fiatarone Singh, 2016; Blond et al., 2020; Sallis et al., 2015).

Studies have shown that high levels of physical activity, combined with other healthy lifestyle behaviors, improve quality of life and well-being, decrease mortality from cardiovascular diseases by up to 50%, and are associated with similarly reduced risks for several types of cancer (Lacombe, Armstrong, Wright & Foster, 2019; Zelenović et al., 2022). At this point, changing lifestyle behaviors is critically important to prevent the increasing prevalence of chronic diseases (Hacker, 2024; Menhas et al., 2021). According to Riegel et al. (2017), if patients with Type 2 diabetes increase their sedentary time by 60 minutes per day, their risk of mortality may rise by 13% (Riegel et al., 2017). Furthermore, it has been emphasized that physical exercise should be regarded as a form of medication for individuals with chronic diseases and integrated into chronic disease management within healthcare systems (Arietaleanizbeaskoa et al., 2020). The World Health Organization recommends that adults engage in at least 150 to 300 minutes of moderate-intensity aerobic physical activity, or at least 75 to 150 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for substantial health benefits (WHO, 2020).

Physical exercise plays a significant role in promoting health, protecting well-being, and preventing chronic diseases. One factor influencing physical activity levels is individuals' health beliefs about exercise. Enhanced health beliefs regarding physical activity contribute to better quality of life and overall well-being (Aktaş & Basat, 2022; Caz, Yazıcı, Uslu & Hacıcaferoğlu, 2024). This study aims to evaluate individuals' health belief attitudes toward exercise. Given the limited number of studies on this topic in Türkiye, the study also seeks to provide recommendations at the individual, societal, and health policy levels to raise awareness about physical activity. The research questions are as follows:

- Do individuals' health belief attitudes toward exercise differ based on sociodemographic variables such as age, gender, marital status, education level, and income status?

- Do individuals' health belief attitudes toward exercise significantly differ based on their average annual utilization of healthcare services?

- Do individuals' health belief attitudes toward exercise significantly differ depending on whether they engage in regular physical activity and believe that exercise is beneficial for health?

MATERIAL AND METHOD

Population and Sample

The study population consisted of literate individuals aged 18 to 65 living in the city center of Çanakkale, while the sample included 415 volunteers who agreed to participate. Çanakkale province was randomly selected to represent the Marmara Region, one of Türkiye's socioeconomically developed areas. As of 2022, the population of Çanakkale is 559,383. A sample size of 385 participants was deemed sufficient to achieve a 95% confidence level with a 5% margin of error (Yazıcıoğlu & Erdoğan, 2014).

To ensure high representativeness for the central districts of Çanakkale, neighborhoods such as Fevzipaşa, İsmetpaşa, Barbaros, Cevatpaşa, and Esenler were randomly selected from different geographical areas. Participants were then selected through convenience sampling, with the support of neighborhood headmen and family health centers. Although convenience sampling is widely used due to its low cost, speed, and efficiency, it is acknowledged that this method may limit the generalizability of findings, as the sample may not fully reflect the broader population (Stratton, 2021).

Participants were informed about the aim of the study, and those who agreed to participate provided written informed consent. Data were collected through interviews conducted at local family health centers and the neighborhood headmen's office. Although 427 individuals were initially reached, 12 were excluded due to incomplete data, resulting in a final sample of 415 participants.

Data Collection Tools

A two-part questionnaire was used as the data collection tool.

Descriptive and exercise information form: The first part consisted of a descriptive and exercise information form, which included 11 items assessing participants' sociodemographic characteristics, exercise habits, and perceived benefits of exercise.

Health Beliefs Attitude Scale Toward Exercise: In the second part, the individuals' health beliefs attitude scale toward exercise, whose validity and reliability were established by

Caz et al. (2024), was used to assess participants' health beliefs attitude toward exercise. The scale is a 7-point Likert-type, ranging from Strongly Disagree (1) to Strongly Agree (7), and consists of three subdimensions: health development (nine items); cognitive health (six items); and continuity (five items) (totaling 20 items). A score closer to 7 on any given item indicates a higher level of agreement with the statement, while a score closer to 1 indicates a lower level of agreement. The scale does not contain any reverse-coded items. Caz et al. (2024) found that four of the Cronbach's alpha coefficients were quite high: 0.923 for the health development subdimension; 0.927 for cognitive health; 0.906 for continuity; and 0.943 for the overall scale.

Place and Time of Research

Data were collected through face-to-face interviews using convenience sampling in the city center of Çanakkale between June 1, 2024, and August 31, 2024.

Study Design

This is a descriptive, cross-sectional study conducted to evaluate individuals' health belief attitudes toward exercise. Cross-sectional research is an observational design in which data from a population are analyzed at a specific point in time (Wang & Cheng, 2020).

The dependent variable of the study is participants' health belief attitude toward exercise. The independent variables include sociodemographic characteristics, average annual utilization of healthcare services, regular engagement in exercise, and belief in the health benefits of physical activity (Figure 1).

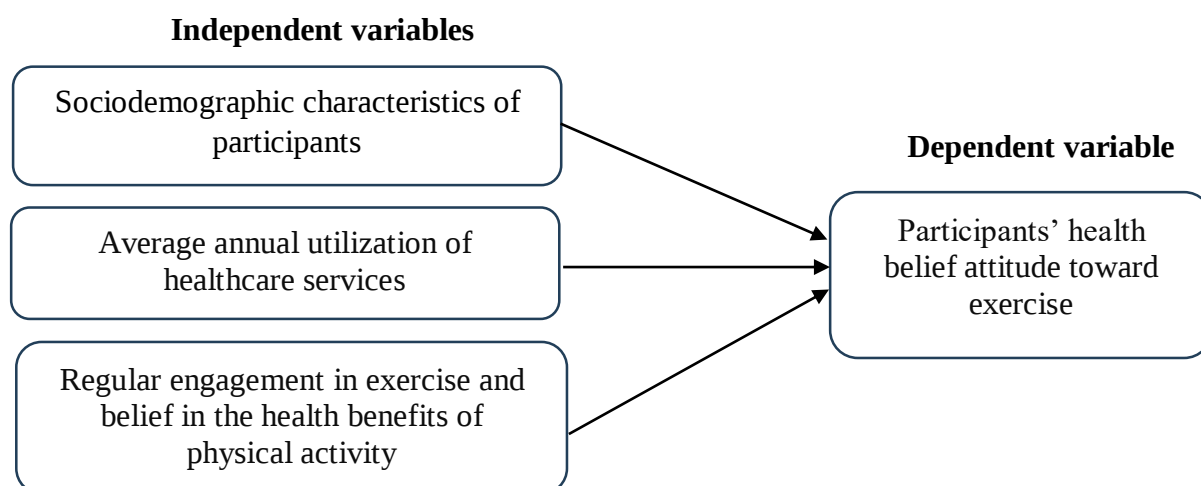


Figure 1. Study design

Inclusion criteria

- Residing in the city center of Çanakkale.
- Aged between 18 and 65 years.

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- Being literate.
 - Willingness to participate in the study

Data Analysis

Data were analyzed using SPSS Version 27. Descriptive statistical methods were employed to summarize the data: quantitative variables were presented as mean, standard deviation, median, minimum, and maximum values; while qualitative variables were expressed as frequencies and percentages. The Shapiro–Wilk test and box plot graphics were used to assess the normality of the data distribution. For variables with normal distribution, the Student's t-test was applied for comparisons between two groups, while one-way ANOVA was used for comparisons among three or more groups. The Bonferroni *post hoc* test was employed to identify the specific group(s) responsible for significant differences. Results were evaluated within a 95% confidence interval, and statistical significance was set at $p < 0.05$.

Limitations

This study has some limitations. First, it is limited to data collected from individuals aged 18–65 residing in the city center of Çanakkale who voluntarily participated during the specified data collection period. While the sample size provides a degree of statistical adequacy, the limited scope of the study may constrain the generalizability of the findings. Therefore, future studies with larger and more diverse samples are recommended to enhance the reliability and applicability of results. Additionally, as the data were collected from a specific geographical area representing only the city center of Çanakkale, the findings may not be generalizable to different sociodemographic groups. Moreover, seasonal factors may also influence the results, as data collection took place between June 1, 2024, and August 31, 2024, potentially affecting participants' health belief attitudes toward exercise, which may limit the long-term validity of the results. Finally, data collection through face-to-face interviews using convenience sampling introduces potential limitations, including representativeness issues, selection bias, constraints related to location and time, and social desirability bias.

Ethical Considerations

This study was conducted with the ethical approval of the Bandırma Onyedi Eylül University Non-Interventional Health Sciences Research Ethics Committee (Decision No: 2024-4/59, dated April 22, 2024). Permission was obtained for the use of the scale employed in the study. Participation was voluntary, and written informed consent was obtained from each

participant. The study was carried out in accordance with the principles of the Declaration of Helsinki.

RESULT

The descriptive characteristics of the participants are presented in Table 1.

Table 1. Participants' Characteristics

Characteristics		n	%
Gender	Female	223	53.7
	Male	192	46.3
Age	20 and under	33	8
	21–30	116	28
	31–40	100	24.1
	41–50	97	23.4
	51 and over	69	16.6
Marital status	Married	243	58.6
	Single	172	41.4
Education status	Primary school	66	15.9
	Secondary/High school	119	28.7
	Associate's/ Bachelor's degree	190	45.8
	Postgraduate	40	9.6
Working status	Working	295	71.1
	Nonworking	120	28.9
Having children	Yes	242	58.3
	No	173	41.7
Income status	Income < Expenses	126	30.4
	Income = Expenses	195	47
	Income > Expenses	94	22.7
Social security	Yes	370	89.2
	No	45	10.8
Average number of healthcare services used per year	None	21	5.1
	1–3	214	51.6
	4–6	141	34
	7 and over	39	9.4
Regular exercise	Yes	160	38.6
	No	255	61.4
Belief that exercise is beneficial to health	Yes	404	97.3
	No	11	2.7

n: Number, %: Percentage

Accordingly, 53.7% of the participants were female, 28% were aged between 21 and 30, 58.6% were single, and 45.8% had an associate's or bachelor's degree. The majority of participants (97.3%) believed that exercise was beneficial for health, yet only 38.6% engaged in regular exercise. Cronbach's alpha was found to be highly reliable for the scale and its subdimensions (Table 2).

Table 2. Descriptive Statistics, Normality Test and Internal Consistency Distribution of the Health Beliefs Attitude Scale Toward Exercise

	Number of expressions	X ± SD	Median (min-max)	Skewness	Kurtosis	Cronbach's alpha
Health development	9	52.94±11.81	57 (9-63)	-1.366	1.564	0.947
Cognitive health	6	36.89±6.03	38 (6-42)	-1.559	2.888	0.928
Continuity	5	23.28±9.35	22 (5-35)	-0.149	-1.113	0.958
Total score of the scale	20	113.12±23.39	116 (38-140)	-0.778	0.147	0.970

X=Average, SD=Standard Deviation, Min=Minimum, Max=Maximum

According to Table 2, the sample group is normally distributed, and the Cronbach's alpha values indicate high reliability. Findings on the comparison between participants' descriptive characteristics and scale scores are presented in Table 3.

Table 3. Comparison of Descriptive Characteristics and Health Beliefs Attitude Scale Toward Exercise

		Total score of the scale		Health Development		Cognitive Health		Continuity	
		X ± SD	Median (Min-Max)	X ± SD	Median (Min-Max)	X ± SD	Median (Min-Max)	X ± SD	Median (Min-Max)
Age	20 and under	118.67±28.36	128 (39-140)	54.52±13.56	59 (9-63)	37.91±6.99	39 (12-42)	26.24±10.26	30 (5-35)
	21–30	114.29±22.81	113 (47-140)	53.11±10.72	54.5 (11-63)	37.07±5.59	38 (13-42)	24.11±9.59	22 (5-35)
	31–40	116.26±19.65	120.5 (51-140)	54.59±10.33	58.5 (19-63)	37.38±5.31	38 (14-42)	24.29±8.18	23 (5-35)
	41–50	105.47±24.34	110 (38-140)	49.96±13.58	54 (9-63)	35.87±6.87	37 (12-42)	19.65±8.69	20 (5-35)
	51 and over	114.7±23.61	118 (47-140)	53.7±11.62	58 (9-63)	36.88±5.96	39 (18-42)	24.12±9.82	26 (5-35)
^b p		0.005**		0.110		0.343		0.001**	
Marital status	Married	110.38±23.03	114 (38-140)	52.17±12.36	55 (9-63)	36.58±6.10	38 (12-42)	21.63±9.05	20 (5-35)
	Single	116.99±23.42	120 (39-140)	54.02±10.95	57 (9-63)	37.34±5.92	38.5(12-42)	25.62±9.29	27.5 (5-35)
^a p		0.004**		0.109		0.207		0.001**	
Education status	Primary school	104.71±25.20	108.5 (38-140)	49.53±14.58	54 (9-63)	35.86±6.81	37 (12-42)	19.32±9.46	19 (5-35)
	Secondary/High school	111.20±24.75	114 (39-140)	52.06±12.45	56 (11-63)	36.23±6.54	38 (12-42)	22.92±9.35	20 (5-35)
	Associate/Bachelor's degree	115.00±21.66	116 (40-140)	53.69±10.43	56 (9-63)	37.12±5.43	38 (14-42)	24.19±9.23	24 (5-35)
	Postgraduate	123.78±18.98	130.5 (47-140)	57.63±9.16	63 (19-63)	39.55±5.08	42 (13-42)	26.60±7.65	27 (14-35)
^b p		0.001**		0.003**		0.005**		0.001**	
Working status	Yes	114.57±22.35	117 (47-140)	53.49±11.42	57 (9-63)	37.32±5.46	38 (13-42)	23.76±9.29	23 (5-35)
	No	109.56±25.53	113.5 (38-140)	51.58±12.68	54.5 (9-63)	35.88±7.17	38 (12-42)	22.10±9.42	20.5 (5-35)
^a p		0.048*		0.136		0.049*		0.100	
Having children	Yes	110.40±23.47	114 (38-140)	52.06±12.67	56 (9-63)	36.45±6.26	38 (12-42)	21.88±9.04	20 (5-35)
	No	116.93±22.82	120 (39-140)	54.17±10.42	57 (11-63)	37.52±5.65	38 (12-42)	25.24±9.45	27 (5-35)
^a p		0.005**		0.065		0.071		0.001**	
Income status	Income < Expenses	110.56±22.40	112 (38-140)	52.27±11.66	54 (9-63)	36.77±5.98	38 (12-42)	21.52±8.88	20 (5-35)
	Income = Expenses	114.53±23.32	119 (39-140)	53.53±11.91	58 (9-63)	37.12±5.85	39 (12-42)	23.88±9.32	23 (5-35)
	Income > Expenses	113.64±24.78	119 (40-140)	52.62±11.88	56 (18-63)	36.62±6.49	38 (13-42)	24.40±9.77	25 (5-35)
^b p		0.323		0.620		0.772		0.035*	
Average number of healthcare services used per year	None	111.33±31.41	125 (50-140)	50.29±15.22	54 (9-63)	35.10±8.13	36 (13-42)	25.95±10.89	33 (5-35)
	1–3	117.27±22.14	121 (47-140)	54.52±11.19	60 (9-63)	37.68±5.37	39 (13-42)	25.06±9.39	25 (5-35)
	4–6	109.24±21.00	110 (39-140)	52.38±10.5	54 (21-63)	36.24±6.1	37 (12-42)	20.62±8.19	20 (5-35)
	7 and over	105.36±29.25	110 (38-140)	47.72±15.6	52 (9-63)	35.95±7.38	38 (12-42)	21.69±9.84	20 (5-35)
^b p		0.004**		0.033*		0.043*		0.001**	
Regular exercise	Yes	129.58±16.42	137 (39-140)	58.51±8.09	63 (9-63)	39.53±4.33	42 (12-42)	31.54±6.05	35 (5-35)

	No	102.80±21.11	106 (38-140)	49.45±12.44	53 (9-63)	35.25±6.36	36 (12-42)	18.10±7.04	19 (5-35)
	^a p	0.001**		0.001**		0.001**		0.001**	
Belief that exercise is beneficial to health	Yes	114.12±22.43	116.5 (39-140)	53.44±11.20	57 (9-63)	37.09±5.79	38 (12-42)	23.58±9.17	22 (5-35)
	No	76.55±29.44	73 (38-140)	34.45±18.41	32 (9-63)	29.91±9.89	30 (12-42)	12.18±9.36	10 (5-35)
	^a p	0.001**		0.001**		0.006**		0.001**	

X=Average, SD=Standard Deviation, Min=Minimum, Max=Maximum, a=Student's t-test, b=One Way Anova Test & Bonferroni Test, *p<0.05, **p<0.01

The results indicated that scale scores did not differ significantly according to gender or social security status ($p > 0.05$). However, participants aged 41–50 scored significantly lower than those under 20 and those aged 31–40 ($p < 0.05$). Married participants had significantly lower total scale and continuity subdimension scores compared to single participants ($p < 0.01$). Participants with a primary school education scored significantly lower than those with associate/bachelor's and postgraduate degrees ($p < 0.05$; $p < 0.01$, respectively). Additionally, participants with a postgraduate degree scored significantly higher than those with secondary and associate/bachelor's education levels ($p < 0.01$).

The total scale score of employed participants was significantly higher than that of unemployed participants ($p < 0.05$). Moreover, participants with children had significantly lower total health belief scores regarding exercise compared to those without children ($p < 0.01$).

Participants whose income was lower than their expenses had significantly lower total health belief scores compared to those whose income was equal to or greater than their expenses ($p < 0.05$). Participants who utilized healthcare services an average of one to three times per year had significantly higher exercise-related health belief scores than those who accessed services four to six times annually ($p < 0.05$). Finally, participants who engaged in regular exercise and those who believed that exercise is beneficial for health had significantly higher total scale scores compared to other participants ($p < 0.01$).

DISCUSSION

The findings of this study, which aimed to evaluate individuals' health belief attitudes toward exercise, indicate that although 97.3% of participants stated they believed exercise is beneficial for health, only 38.6% reported engaging in regular physical activity. A review of national and international literature reveals that while some studies support these findings, others report differing results. For instance, Bauman et al. (2009) found that, among individuals aged 18–65 in 20 countries, the prevalence of high physical activity ranged from 21% to 63%, whereas low physical activity prevalence varied between 9% and 43%. In a study conducted on young individuals, 60.7% of participants were found to have a low level of physical activity, while 35.2% were classified as highly active (Yılmaz Aydın & Camcıoğlu Yılmaz, 2024). Furthermore, Kasırğa, Odabaşoğlu and Dedeoğlu (2021) reported that 75.9% of participants were physically inactive, while Pirinççi, Cihan, and Yıldırım (2020) and Kğokong and Parker (2020) found inactivity rates of 59% and 62.5%, respectively. In contrast, Aktaş and Basat (2022) found that 67.3% of participants engaged in exercise, with 52.8% exercising regularly.

Limaroon, Watakakosol, and Suttiwan (2019) reported that 75% of participants intended to exercise. Additionally, 17.71% stated that not exercising would increase their risk of developing unhealthy muscles, which could lead to obesity (16.67%) or osteoporosis (13.54%). Furthermore, Nicklett, Semba, and Xue (2012) found that physically active adults had a 40%–50% lower risk of premature death compared to those who were inactive.

The literature indicates that the major barriers to exercise include low energy levels, lack of motivation, laziness, perceiving physical activity as a tiring task, financial constraints, geographical characteristics of the area of residence, lack of time, and the unavailability of accessible places suitable for exercise (Yılmaz Aydın & Camcıoğlu Yılmaz, 2024; Kgonkong & Parker, 2020; Özkul, 2021; Kasirga et al., 2021; Ferreira Silva et al., 2022; Griffiths, Moore & Brunton, 2022; Limaroon et al., 2019). One of the ways to overcome these barriers has been identified as implementation of educational programs. In addition to exercise-related education and training initiatives, the development of supportive environments and arrangements of green parks at the national level have been found to positively influence individuals' beliefs and behaviors regarding physical activity (Çiftci & Kadioğlu, 2023; Menhas et al., 2021; Holler et al., 2019). The findings of this study reveal a gap between attitude and behavior, as the majority of participants believe in the benefits of exercise but do not engage in regular physical activity. This outcome aligns with previous studies in the literature and suggests that attitudes toward exercise are influenced not only by belief levels but also by individual and environmental factors. Therefore, to translate exercise-related health beliefs and attitudes into sustained behavioral change, multidimensional strategies are needed at individual, social, political, and environmental levels.

At the individual level, strategies may include providing personalized information about the benefits of exercise and planning individualized exercise counseling services under the supervision of physiotherapists. Social-level strategies may involve implementing community-driven awareness initiatives, cultivating supportive networks within families, workplaces, and peer groups, and designing group exercise sessions led by physiotherapists. Policy-level recommendations include integrating physiotherapists into primary and community-based healthcare service centers, developing intersectoral and multidisciplinary initiatives to promote positive knowledge, attitudes, and behaviors regarding exercise, and the implementation of healthy living centers as emphasized in Türkiye's national policy frameworks. Physiotherapists, in particular, can play an important role in improving individuals' physical health, preventing injuries, and changing their attitudes toward exercise. Furthermore, environmental and structural strategies may include expanding parks, green spaces, walking trails, and bicycle

paths at the national level; enhancing physical and financial access to these exercise-friendly environments; and introducing workplace incentive programs to promote physical activity. It is recommended that quantitative and qualitative research be conducted in the future to identify the obstacles that prevent individuals from exercising regularly.

In this study, no statistically significant difference was found in participants' health belief attitudes scale scores toward exercise based on gender. Findings in the literature on this topic demonstrate variability. Similarly, studies by Yılmaz Aydın and Camcıoğlu Yılmaz (2024) and by Caz and Yazıcı (2024) also show that gender did not have a statistically significant effect on exercise belief levels. Conversely, several studies have reported higher total scores in health belief attitudes and physical activity levels among male participants compared to female participants (Caz et al., 2024; Şahan, 2024; Gong & Sheng, 2023; Zhang, Bai, Song & Zhang, 2024; Kasırğa et al., 2021; Pirinççi et al., 2020; Cheah & Poh, 2014, Bauman et al., 2009). In traditional cultures, gender roles are suggested to influence individuals' exercise behaviors and health-related beliefs (Chen et al., 2011; Cheah & Poh, 2014). Men are generally motivated by intrinsic factors such as competitiveness, personal interest, or the pursuit of strength, whereas women tend to be driven by extrinsic factors, including the desire for an attractive appearance, weight loss, or gaining social attention (Molanorouzi, Khoo & Morris, 2015; Tsai et al., 2015). The finding that gender did not lead to a significant difference in individuals' health belief attitudes toward exercise suggests that these attitudes may be influenced by social, political, and environmental factors such as cultural norms, individual motivation sources, and gender roles. Future research would benefit from conducting similar studies across different age groups, along with qualitative investigations that allow for an in-depth exploration of gender's influence on exercise attitudes.

In this study, participants aged 41–50 had significantly lower total scale scores compared to other age groups. This finding is consistent with the results reported by Cheah and Poh (2014) and Bauman et al. (2009), both of whom indicated that the likelihood of individuals engaging in physical activity decreases with age. In contrast, Caz and Yazıcı (2024) found a statistically significant relationship between age and the subdimensions of the health belief attitude scale toward exercise. The highest mean scores for the health development and cognitive health subdimensions were observed in participants aged 42 and above, while the lowest were found in the 18–25 age group. For the continuity subdimension, the highest mean was reported in the 18–25 age group and the lowest in the 26–33. Further, Caz et al. (2024) reported that participants aged 33 years and older scored significantly higher on the subdimensions of the health belief attitude scale toward exercise than those aged 18–22 and 23–27. Similarly, Chen

et al. (2011) found that age was positively associated with leisure-time physical activity. In another study, a statistically significant difference was found in perceived health status among individuals aged 50–59 who engaged in regular walking and those aged 60–69 who performed moderate physical exercise, compared to individuals aged 40–49. It was determined that participants in the 50–59 and 60–69 age groups who engaged in physical activity had better self-perceived health than those in the 40–49 age group (Lera-López, Ollo-López, Garrués-Irisarri, Cabasés & Sánchez, 2018).

Furthermore, in a 20-year cohort study conducted by Aggio et al. (2018) involving 4,952 male participants aged 40–59, three distinct physical activity trajectories were identified. During the follow-up period, 24.6% of participants were classified in the low-decreasing group, 51.1% in the light-stable group, and 24.3% in the moderate-increasing group. These differences observed in the literature may be attributed to individuals' lifestyles, the social and cultural environments in which they live, and their financial resources. As individuals age, their metabolism slows down and bodily functions tend to decline. These variations suggest that attitudes toward exercise-related health beliefs are shaped not only by chronological age but also by lifestyle, socioeconomic status, and perceived health. Based on the findings of this study, it is suggested that age-specific awareness programs be designed to enhance individuals' health belief attitudes toward exercise. Physiotherapists, in collaboration with other healthcare professionals, can develop age-appropriate interventions and motivational strategies, particularly within primary healthcare settings and healthy living centers, which will contribute to the adoption and sustainability of community-based exercise habits. Notably, with advancing age, the design of tailored exercise plans that help maintain motivation, prevent chronic diseases, and support healthy nutrition becomes increasingly important.

Married participants had significantly lower health belief attitude scores and continuity subdimension scores toward exercise compared to single participants. Pettee et al. (2006) found that married individuals had higher physical activity levels compared to single individuals, which aligns with the findings of our study. In contrast, Köprülüoğlu, Felekoğlu, and Naz Gürşan (2024) found no significant difference in health belief attitude scores based on marital status, while Cheah and Poh (2014) reported that single individuals had a lower likelihood of engaging in physical activity. Similarly, Dlugonski and Motl (2013) found that single mothers had lower levels of physical activity compared to married mothers. One possible explanation for these findings is that married participants may be unable to allocate sufficient time for physical exercise due to increased household responsibilities. Conversely, single individuals may engage in more exercise as they tend to be more concerned with body image compared to

married individuals. These results highlight the importance of designing exercise incentive programs that consider sociodemographic variables such as marital status. Given that married individuals often have limited time for exercise due to familial and occupational responsibilities, it is recommended to develop flexible and accessible exercise programs, leveraging digital health technologies to facilitate participation. Furthermore, the variability in findings regarding the influence of marital status on exercise behavior suggests that such differences may arise from the research methods employed and the sociocultural context in which individuals live. Therefore, it would be beneficial to develop targeted recommendations informed by studies conducted across diverse sample groups and sociocultural settings, using various research methodologies to ensure broader representation.

This study observed that health belief attitude scores toward exercise increase with higher levels of education. Similarly, Akdeniz Kudubes, Ayar, Bektaş, and Bektaş (2022) found that participants' attitudes toward physical activity significantly improved with higher education levels. A study conducted in Eastern Slovakia found that, although individuals with higher education levels had a higher level of awareness of the importance of physical activity, there was no significant difference in terms of actual physical activity levels (Buková et al., 2021). On the other hand, Köprülüoğlu et al. (2024) stated that health belief attitude scores did not significantly differ based on education level, and Cheah and Poh (2014) stated that individuals with higher education levels had a lower likelihood of participating in physical activity. As the education level increases, individuals' knowledge and health literacy regarding healthy living may also improve, which can positively affect the health beliefs and attitudes toward exercise. However, discrepancies in the literature may stem from individual participant characteristics as well as cultural and socioeconomic differences. Future research should evaluate the relationship between education level, health literacy, and exercise-related health beliefs and attitudes in diverse sociocultural groups. Additionally, conducting experimental studies across groups with varying education levels would provide clearer insights into these associations.

The total scale scores of employed participants were significantly higher than those of unemployed participants. Similarly, Cheah and Poh (2014) found that unemployed individuals have lower levels of physical activity. This finding suggests that employment may positively influence individuals' health beliefs regarding exercise. Furthermore, participants whose income was lower than their expenses had significantly lower scores on health belief attitudes toward exercise. Monthly income was found to be a significant factor influencing these attitudes (Gong & Sheng, 2023). Humphreys and Ruseski (2011) found that income is positively associated with individuals' likelihood of participating in physical activity, which aligns with

the findings of this study. In contrast, Cheah and Poh (2014) reported that as income level increases, the likelihood of individuals engaging in physical activity decreases. The authors attributed this to individuals with higher incomes tending to allocate more of their leisure time to work rather than physical activity. Considering that participants with higher income levels are more likely to have access to and benefit from fitness centers, their higher health belief attitude scores toward exercise can be considered an expected outcome. To better understand the impact of income level and employment status on health beliefs regarding exercise, future research should also consider factors such as occupational groups, lifestyle, and leisure time use. Furthermore, developing exercise programs targeting low-income and unemployed individuals may positively influence their health beliefs.

The total scale scores of individuals who exercise regularly and believe in the health benefits of exercise were found to be significantly higher. This is an expected outcome of the study, as previous research has shown that individuals who strongly believe in the positive effects of exercise are more likely to engage in behaviors aimed at improving and maintaining their health (Kgokong & Parker, 2020; Zhang et al., 2024). Health belief models specifically related to exercise aim to identify the beliefs and values that influence individuals' exercise behaviors, with the ultimate goal of promoting the adoption of healthier lifestyle practices (Kartal, Yılmaz & Kartal, 2021). Caz et al. (2024) revealed that participants who exercised five to seven days per week had higher health belief attitude scores than those who exercised one to two or three to four days per week. Similarly, Yılmaz Aydın and Camcıoğlu Yılmaz (2024) found that, as individuals' health beliefs about exercise increased, their physical activity levels also increased. Caz and Yazıcı (2024) further noted that participants exercising five to seven days per week scored higher in the continuity subdimension of the exercise-related health belief attitude scale.

Consistently, Köprülüoğlu et al. (2024) found that those with regular exercise habits had higher overall health belief attitude scores. These findings indicate that health beliefs about exercising play a critical role in promoting regular physical activity. In this context, it is important to develop strategies that strengthen individuals' health beliefs through exercise promotion programs implemented at the policy level, particularly under the leadership of the ministry's central administration and through intersectoral collaboration. Furthermore, future research should focus on identifying methods to sustain exercise habits across different population groups over the long term, in order to design more effective interventions based on long-term monitoring efforts aimed at improving and protecting public health.

CONCLUSION

The findings of this study show that while individuals possess high health beliefs regarding exercise, the proportion of those who engage in regular physical activity remains low. It is important to conduct studies that will increase the physical activity levels of individuals who are over 40 years of age, female, have low income and education levels, are married, and are not actively working, in order to prevent chronic diseases and improve quality of life. For this purpose, conducting awareness-raising activities at the community level in collaboration with local governments, the Ministry of National Education, and primary healthcare institutions may be beneficial. Additionally, increasing the frequency of public service announcements emphasizing the importance of exercise, developing risk prediction tools for the early detection and prevention of chronic diseases, and leveraging digital health technologies for behavior change and chronic disease management are recommended.

Incorporating courses that highlight the importance of physical activity from early childhood in educational institutions and increasing the number of physical education hours and planning regular educational programs in primary healthcare centers and community health centers to raise public awareness, could contribute positively. It is important to include physiotherapists in all of these initiatives as a professional group. Physiotherapists can design individualized exercise programs tailored to the specific needs and conditions of individuals and groups, support individuals in developing regular exercise habits by enhancing their motivation, and contribute to raising public awareness about the benefits of physical activity.

Furthermore, physiotherapists can identify the barriers individuals face and develop appropriate solutions, provide personalized guidance to support behavior change, thereby contribute to improving quality of life. Therefore, the active involvement of physiotherapists, particularly at the policy level, is vital for strengthening health beliefs related to exercise and ensuring the long-term sustainability of physical activity initiatives. In addition, it is recommended that green spaces and exercise-friendly areas be equipped with sports equipment and that walking paths be expanded as part of environmental and urban planning. In subsequent stages, it may be beneficial to conduct similar studies with larger sample groups, alongside qualitative research aimed at identifying the reasons that prevent individuals from exercising regularly despite having positive health belief attitudes toward exercise.

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