



RESEARCH ARTICLE

Determination of the Relationship between Attitude towards Food Supplements and Physical Health Perception

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Abstract

In this age when the importance of human and public health is increasing, inactivity, which is seen as one of the most important problems, and the increase in obesity rates threaten public health. Therefore, the importance of physical activity and nutrition is increasing and new researches are being conducted in this field. The aim of this study is to analyse the relationship between physical health perception and attitude towards the usage of food supplements. Relational survey method was used in this study designed to determine this relationship between variables. 287 academic staff (85= female, 202= male) participated in the study. The physical health statements of the PROMIS global health scale and the scale adapted to the use of food supplements after a literature review were used. As a result, significant relationships were determined between attitude towards the use of food supplements and physical health perception. It was determined that academicians generally considered themselves healthy and were open-minded about the use of food supplements ($F=8.150$ $p=0.000$), physical health perception differed according to their field of study ($F=4.912$; $p=0.002$), and those who exercised regularly had a higher physical health perception ($F=8,339$; $p>0.05$). The study revealed important results in terms of guiding individual, public health and government policies. It is recommended for new researchers to examine the concepts related to rest, sleep behaviours and nutritional knowledge.

Keywords

Academic staff, Body Mass Index, Dietary habits, Food supplements, Perceived physical health

INTRODUCTION

While concerns about poor health and obesity are increasing in today's societies (Hardman and Stensel, 2009), it can be stated that individual steps and public projects for health protection confirm this concern. Diet and physical activity are the focal components of managing the risk of cardiovascular disease (Kinnear, et al. 2020). In the 20th century, life expectancy increased thanks to advances in public health (Merrick, 2016). Maintaining and improving the overall health of people and societies is seen as an important and rapidly increasing challenge.

General health risks include cardiovascular diseases, diabetes and cancer (Levine et al. 2005; Stensel et al. 2021). Against inactivity, which has become an important problem all over the world, it is known that projects to combat obesity and develop movement habits are supported to protect and improve public health. It is recognised that against inactivity, which has become an important problem of whole world, projects to struggle against obesity and to develop movement habits are supported in order to protect and improve public health. An individual who wants to lead a healthy life should also develop regular physical activity, quality sleep and nutrition habits. It is

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thought that improving one's overall health can be related to one's own development. Therefore, well-educated people will be more aware and can develop behaviors to protect and improve their personal health. Nutrition behaviors, which are important for human and public health, may change over time. People may turn to food supplements to access clean and healthy food and to protect their personal health. Based on nutritional habits, the relationship between perceived physical health and attitudes towards food supplements gains importance.

Perceived physical health

Perceived health is a subjective evaluation expressed by the person himself/herself. Subjective health assessment does not have a medical diagnostic basis and includes the evaluation of feelings of physical pain or discomfort as well as feelings such as well-being and satisfaction with life (Szwarcwald et al. 2005). The most common method preferred in the measurement of perceived health is the individual's personal opinion about his/her own health. It has been stated that this method, which includes subjective evaluations, is an important component of survival (Idler and Benyamini, 1997). Studies on perceived health behaviors have shown that there are poor eating habits (Tremblay, et al. 2003), objective and subjective obesity assessment (Stranges et al. 2006) and low physical exercise frequency (Kaleta et al. 2006). In a study on physical health and nutrition, it was reported that adolescents who engaged in more physical activity had better health status (García Mayor et al. 2021) and adherence to the Mediterranean diet was reported to be higher (Moral-García et al. 2020). In accordance with these results, it can be stated that personal health perception is important for one's own life.

Dietary Habits

Nutrition, one of the basic needs of human beings, is also important for public health. It is possible to protect and improve individual and social health with a balanced and healthy diet. Especially in children, it has been stated that the presence of negative factors related to eating habits may increase inactivity and lead to significant health problems (Ayas and Göral, 2023). Nutritional knowledge and habits acquired during youth (Altınok and Güvenç, 2022) are important in shaping a healthy life and (Rosi et al. 2020) in gaining nutritional habits. It has been determined

that socio-economic level and educational status affect the level of nutritional knowledge (Saribay and Kirbas, 2019). Nutritional knowledge will positively affect nutritional skills (Velardo, 2015), and thus, food preferences and nutritional behaviors of people with high levels of nutritional knowledge will be shaped. Food choice is one of the leading factors affecting people's eating habits. Food choice is motivated by physiological, social and economic factors, including taste, convenience, nutritional knowledge and beliefs, and involves individual and community differences (Birkenhead and Slater, 2015; Velardo, 2015). Therefore, it can be stated that eating habits have important for human life.

Food supplements

Interest and demand for food supplements to meet the need for a healthy diet is increasing worldwide. In studies on the habits of food supplement use, it was reported that participants used food supplements at least 21% in Spain (Pérez-Rodrigo et al. 2021), 37.7% in China (Zhao et al. 2020), 26% in Saudi Arabia (Zaki et al. 2020), and 36% in Turkey before the COVID-19 outbreak (Macit, 2020). Food supplements are needed to overcome the deficiencies caused by nutritional barriers such as population growth, access to healthy food and economic factors. Food supplements are defined as the consumption of nutrients that cannot be taken in a balanced and sufficient level in pill, tablet, capsule and liquid forms (Kılıç Kanak et al. 2021). Food supplements can be defined as non-food substitutes that are taken to supplement the nutrients that the body is thought to need for reasons such as taking substances that the body cannot synthesize itself, consumption barriers due to allergies or intolerances, personal beliefs such as veganism or vegetarianism, and reducing the risk of disease. Human beings consume food supplements for a variety of reasons, such as to compensate for or balance nutritional deficiencies (O'Dea, 2003; Petroczi et al. 2011), cosmetic reasons (Castillo and Comstock, 2007), wellness (Nichter and Thompson, 2006), or sexual performance (Reay et al. 2005). As stated in the literature, it can be stated that people generally turn to food supplements in order to maintain a healthy and productive life. In addition, the easy availability and uncontrolled use of food supplements (Samar, 2021) can be seen as one of the factors that put public health at risk. It can be stated that individual

attitudes towards food supplements and uncontrolled use are also important. In research on athletes, the belief that athletes have an advantage (doping effect) in competitions and ease of access to food supplements (Rudarli Nalçakan, et al. 2020; Yazar, et al. 2022).

Based on the variables subject to the research, perceived health, eating habits and food supplements gain importance in terms of human and public health. Due to the importance of dietary habits and physical activity and the use of food supplements, the main focus of this research can be expressed as the identification of the relations between these behaviours.

MATERIALS AND METHODS

In this research, the relational survey method, which "aims to determine the existence and/or degree of co-variance between two or more variables" (Büyüköztürk, et al. 2013; Fraenkel and Wallen, 2006; Karasar, 2016), was used. The measurement tool prepared for data collection in the context of the study was applied face-to-face to the participants. The data of the study participants who agreed to participate in the study were evaluated.

Participants

The research was conducted with academic staff (n=882) working in a public university. The research sample is limited to the opinions of 287 (85=female, 202=male) participants (85=female, 202=male) who volunteered to participate in the research and were randomly selected from the population. All academic units were tried to be reached by not considering differences such as title and seniority among academic staff. The sample size in the research is expected to reach at least 10 times the total number of statements or at least 200 sample size (Büyüköztürk, 2002). However, according to Yazıcıoğlu and Erdoğan (2014) the sampling error of ± 0.05 was determined as 278 at a significance level of $p=0.05$ in determining the sample for such studies conducted in social sciences. Convenience sampling method was used for data collection. In the study, all conditions stated in the literature on sampling were met (n=287). The questionnaire prepared by the researcher was applied face-to-face, incorrect and incomplete questionnaires were excluded from the scope of the study, and the data were coded, transferred to the SPSS v26 package program and

analyzed. Approval was obtained from Hitit University Non-Interventional Ethics Committee (2023/09) for the implementation of the study. Detailed demographic characteristics of the employees participating in the study are given in Table 1.

Measurements

In the study, the physical health statements of the "PROMIS global health scale" developed by Hays et al. (2009) and whose reliability study was conducted again in (Hays et al. 2017) were used. The first of the scale statements is a personal health assessment derived from responses to the question "How would you rate your health in general? For comparable scaling with other health items, responses were coded as 5=very healthy, 4=in good health, 3=healthy, 2=neither good nor bad health, 1=not healthy. The second statement asks "Compared to other people your age, how would you rate your health in general? For comparable scaling, this question was coded as 5=my health is much better than most people my age, 4=my health is better than most people my age, 3=my health is about the same as most people my age, 2=my health is worse than most people my age, and 1=my health is much worse than most people my age". The third statement is "How often does your health get in the way of what you want to do? (1=very often to 5=never). Finally, the responses to the statement "How satisfied are you with your current health status? (1=not satisfied at all, 2=dissatisfied, 3=somewhat satisfied, 4=satisfied and 5=very satisfied) were coded. Participants' responses were summed and divided by the number of valid responses. Scores ranged from 1 to 5 (poor to good physical health) and the internal consistency was .78.

A literature review was conducted to determine attitudes towards food supplements. In the literature review, it was determined that the focus was generally on concepts such as nutrition knowledge, feelings and behaviors towards nutrition, good or bad nutrition, and type of nutrition (Özkan Pehlivanoglu et al. 2020; Tekkurşun Demir and Cicioğlu, 2019; Ulaş Kadioğlu, 2019; Yolcuoğlu and Kızıltan, 2021). The food supplements subject to the research define the industrial products of a market with high economic value. For this reason, it is thought that researchers are not inclined to conduct studies on food supplements. The scale created as a result of examining the scales examining knowledge,

feelings and behaviors, that is, attitudes towards nutrition, was adapted to the use of food supplements. According to experts, the scale has high reliability if the internal consistency coefficient is between 0.80 and 1 (Alpar, 2006; Büyüköztürk, 2014; Tavşancıl, 2014). The structural reliability and validity analyses of the scale are included in the findings. The scale was prepared as a Likert-type rating as "*Strongly disagree*", "*Disagree*", "*No idea*", "*Agree*", "*Strongly agree*".

RESULTS

In this part of the study, findings related to the demographic characteristics of the participants, reliability and frequency analyses, t-test and Anova test results are presented. Cronbach's Alpha reliability values of the scales used in the study were calculated as ,771 for the cognitive dimension of the food supplement use scale, ,717 for the affective dimension, ,695 for the behavioural dimension, ,737 for the whole scale and ,779 for the physical health perception scale.

Table 1. Demographic characteristics of participants

Variables		f	%
Gender	Female	85	29,6
	Male	202	70,4
Marital Status	Married	172	59,9
	Single	115	40,1
Age	25-34 age	82	28,6
	35-44 age	109	38,0
	45 years and over	96	33,4
Body Mass Index	Normal weight	128	44,6
	Overweight	111	38,7
	Obese	48	16,7
Scientific Area	Medicine/Health Sciences	36	12,5
	Science	53	18,5
	Social Sciences	144	50,2
	Engineering and Natural Sciences Sciences	54	18,8
Food Supplement Use	Yes	83	28,9
	No	204	71,1
Making Regular Exercise	Yes	87	30,3
	No	200	69,7
Total		287	100

It is seen that the majority of the participants are male (70.4%) in terms of gender. In terms of age, it can be stated that 82 participants are between 25-34 years old, 109 participants are between 35-44 years old, and 96 participants are 45 years old and above. In terms of marital status, 59.9% of the participants are married and 40.1% are single (Table 1). When the participants are analysed in terms of their fields of study, it is seen

that the majority of them work in social sciences (50.2%) and science (18.5%) and engineering-natural sciences (18.8%). In terms of Body Mass Index, 44.6% of the participants were normal weight, 38.7% were overweight and 16.7% were obese. The majority of the participants stated that they did not use food supplements (71.1%) and did not exercise regularly (69.7%) (Table 1).

Table 2. Analysis of regular exercise participation in physical health and food supplement use

	Making Regular Exercise	N	Mean	Sd.	F	p
Physical Health Perception	Yes	87	3,38	,68	8,339	,004
	No	200	3,18	,53		
Food Supplement Use	Yes	87	3,45	,35	3,026	,083
	No	200	3,37	,30		

$p < 0,05$

The results of the analysis showed that the physical health perception of those who exercise regularly differed ($F=8,339$; $\bar{X}=3,38$), while no significant difference was found in the use of food

supplements ($p > 0,05$). Based on the table, it was determined that regular exercisers ($\bar{X}=3,38$) perceived their physical health status better than non-exercisers ($\bar{X}=3,18$) (Table 2).

Table 3. Analysis of physical health and food supplement use on body mass index

	BMI	N	Mean	Sd.	F	p	Post-Hock
Cognitive Dimension	Normal weight	128	3.50	.57	8.150	.000	1>3 2>3
	Overweight	111	3.35	.67			
	Obese	48	3.06	.81			
	Total	287	3,37	,67			
Affective Dimension	Normal weight	128	3.01	.57	3.553	.030	2<5 3<5 4<5
	Overweight	111	3.06	.67			
	Obese	48	2.75	.81			
	Total	287	2,99	,68			
Behavioural Dimension	Normal weight	128	3.75	.57	.034	.967	No difference
	Overweight	111	3.75	.67			
	Obese	48	3.78	.81			
	Total	287	3,76	,72			
Physical Health Perception	Normal weight	128	3,24	,53	8.150	.000	1>3 2>3
	Overweight	111	3,31	,59			
	Obese	48	3,09	,70			
	Total	287	3,24	,59			

As a result of the analyses conducted to reveal whether the perception of food supplement use differs according to the body mass index of academicians, it was found that the perception of food supplement use of academicians in the normal weight ($\bar{X}=3.50$) and overweight group ($\bar{X}=3.35$) differed in the cognitive dimension compared to those who were obese ($\bar{X}=3.06$) ($F=8.150$ $p=0.000$). When the results of the body mass index and physical health perception of the academicians constituting the research sample were examined, it was determined that the physical health perception of the academicians in the obese ($\bar{X}=3,09$) category differed compared to those in the normal weight ($\bar{X}=3,24$) and overweight group ($\bar{X}=3,31$) (Table 3).

As a result of the analyses conducted to reveal whether the perceptions of food supplement use differ according to the age variable of academicians; while there was no difference in the affective dimension, it was found that the perceptions of food supplement use of academicians aged 25-34 ($\bar{X}=3.50$) differed in the cognitive dimension compared to academicians aged 45 and over ($\bar{X}=3.21$; $F=4,492$ $p=0.012$). In the behavioural dimension, it was found that academics aged 45 years and over ($\bar{X}=3.89$) had a different perception of food supplement use compared to academics aged 25-34 years ($\bar{X}=3.60$; $F=3,517$ $p=0.031$) (Table 4).

Table 5. Analysis of physical health and food supplement use on scientific area

	Scientific Area	N	Mean	Sd.	F	p	Post-Hock	
Perception of food supplement	Cognitive Dimension	Medicine/Health Sciences	36	3,55	,70	1,234	,298	No difference
		Sciences	53	3,29	,56			
		Social Sciences	144	3,37	,69			
		Engineering Sciences	54	3,31	,69			
		Total	287	3,37	,67			
	Affective Dimension	Medicine/Health Sciences	36	3,15	,75	1,020	,384	No difference
		Sciences	53	2,89	,55			
		Social Sciences	144	2,99	,68			
		Engineering Sciences	54	2,97	,76			
		Total	287	2,99	,68			
	Behavioural Dimension	Medicine/Health Sciences	36	3,56	,82	1,805	,146	No difference
		Sciences	53	3,66	,60			
Social Sciences		144	3,84	,69				
Engineering Sciences		54	3,76	,84				
Total		287	3,76	,72				
Physical Health Perception	Medicine/Health Sciences	36	3,36	,50	4,912	,002	1>2 3>2 4>2	
	Sciences	53	2,99	,53				
	Social Sciences	144	3,26	,63				
	Engineering Sciences	54	3,37	,50				
	Total	287	3,24	,59				

As a result of the analyses conducted to determine the difference between the perceptions of academicians' fields of study on physical health and use of food supplements, it was determined that academicians in the fields of medicine/health sciences ($\bar{X}=3.36$), social sciences ($\bar{X}=3.26$) and engineering ($\bar{X}=3.37$) perceived their physical health status better than academicians in the field of science ($\bar{X}=2.99$) ($F= 4.912$; $p=0.002$).

DISCUSSION

The aim of this study is to define the relation between physical health perception and attitude towards the use of food supplements. Human physical health is related to nutrition, rest and movement. In order to maintain health, the body needs to ensure that its needs are adequately met, healthy and adequate nutrition, exercise and rest are needed. In this context, studies on food supplements generally focus on dietary habits. Considering the increase in the use of food supplements, it is important to reveal how physical health affects individuals. The demographic data show that the majority of the participants were

male (70.4%), 82 participants were between the ages of 25-34, 109 participants were between the ages of 35-44, 96 participants were 45 years and over, 59.9% were married and 40.1% were single. It was determined that the majority of the participants worked in the field of social sciences (50.2%), 28.9% used food supplements and 30.3% exercised regularly (Table 1).

The results of the study showed that academicians who exercised regularly perceived their physical health status as better and felt themselves healthier (Table 2). It is known that one of the most important factors of physical health is physical activity. One of the requirements of a positive life in terms of individual and community health is proper nutrition and physical activity (Kaya et al. 2018). A study conducted on students reveals that physical health perception is affected by demographic, economic, social, psychological and competence factors (Vingilis et al. 1998). In a study focusing on the relationship between nutrition and physical activity with 1155 adult participants in Spain, the importance of the Mediterranean diet and physical activity was emphasised (Pérez-Rodrigo et al. 2021).

According to these findings, physical inactivity is associated with the development of obesity (Levine et al. 2005). It can be claimed that the positive relationship between exercise and health in these studies coincides with the results of the research. It was determined that academicians who were normal weight and overweight in terms of body mass index found their physical health better, had knowledge about food supplements and followed the discourses on the use of food supplements (Table 3). It is known that low food and nutrition literacy status is a barrier to healthy eating (Ulaş Kadioğlu, 2019). It can be noted that academicians generally consider themselves healthy and are open-minded about the usage of food supplements and are interested in the arguments that they have knowledge on this subject. The finding that nutrition knowledge directly affects nutrition behaviour (Yolcuoğlu and Kızıltan, 2021) supports the results of the research. The academic staff aged 25-34 years were more active in the cognitive and behavioural dimensions of their attitudes towards the use of food supplements compared to those aged 45 years and over (Table 4). Mechanic and Hansell (1987) argued that young people's perception of physical health is shaped by the general sense of functioning measured by family quality, and that achievement and self-esteem are related to this perception.

The results of the study indicated that young people have more positive attitudes towards food supplements with the intention of becoming or staying healthier. This findings may partly explain why epidemiological studies on self-assessment of health have shown that young people do not rate their own health much higher than older individuals, despite the lower prevalence of chronic health problems among young people (Mulder, 1996). This finding is consistent with other studies that suggest that chronic health conditions actually have a limited impact. In a comparative analysis of the chronic health problems, Wolman et al. (1994) emphasised the importance of body image. In another study, body image was found to be a strong determinant of emotional well-being (Vingilis et al. 1998). These results support the positive attitude of young people towards food supplements.

It was determined that academic staff working in social sciences, health sciences and engineering found themselves physically healthier

(Table 5). It is thought that academicians do a meaningful job open to development as people who contribute to science production and aim to improve life through research. It has been determined that academicians who perform the job of knowledge production professionally have a meaningful and purposeful life perception and role-identity clarity, which mediates their positive effects on mental and physical health (Thoits, 2012). In addition, it has been revealed that individuals' physical health perceptions are significantly related to economic and social status in terms of psychological, behavioural and competence factors (Weston et al. 1989). Therefore, our findings that the physical health perceptions of academics who have a meaningful job such as producing science are generally high are supported by the literature. As a conclusion, significant relationships were determined between attitudes towards the usage of food supplements and physical health perception. It is thought that the fact that the use of food supplements is important especially in the cognitive and behavioural dimension may be due to the fact that the research sample is scientist

Limitations

Although the results of this study conducted on academic staff make important contributions to the literature, it has some limitations. The most important limitation is that there is no accepted method that can be used to measure food and nutrition literacy in our country (Ulaş Kadioğlu, 2019). Another is that the data were collected using a cross-sectional design. For this reason, it eliminates the possibility of collecting only the perceptions of the participants, who are only academicians, at a moment in time and consequently predicting behaviour over time. In addition, the fact that the main mass of the study consists only of academics and that it was conducted at a university creates an obstacle to the generalisability of the results. Another constraint of the study is that the participants correctly understood the statements in the questionnaire form. In this study, it was carried out with two variables in order to limit the number of statements in the questionnaire form.

Recommendations

According to the results of the research, it is believed that nutritional intelligence has a direct effect on nutritional behaviour and it is of great importance to increase social awareness by taking

into account the importance of educational programmes in terms of individual and public health (Yolcuoğlu and Kızıltan, 2021), and for this purpose, it is thought that educational programmes should be carried out systematically.

In future studies, revealing the effects of physical activity level, rest and sleep behaviours or health-related tests on other variables may allow better interpretation of the results of the research. In an age of increasing concern about obesity and decreasing physical activity, studies on individual health will continue to be a central issue for public health and therefore for governments. This study builds on this understanding and provides a fertile ground for future enquiry.

Conflict of interest

No conflict of interest is declared by the authors. In addition, no financial support was received.

Ethics Committee

This study is approved by the Hitit University Non-Interventional Ethics Committee (Protocol number: 2023/09).

Author Contributions

Study Design, Data Collection, Statistical Analysis, Data Interpretation, Article Preparation, Literature Review processes were carried out by the Author. The author has read and accepted the published version of the article.

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