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The Predictors of Quality of Life of Coronary Heart Disease Patients: A Study in Türkiye

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Abstract

Aim: The aim of this study was to examine the predictors of the quality of life of patients who have coronary heart disease in Turkey.

Methods: The sample consisted of 796 participants with coronary heart disease selected from a nation-ally representative 2019 Turkey Health Survey. The effects of individual-level, individuallevel healthy behaviors, household-level, and regional-level characteristics on quality of life were analyzed by using nested regression in STATA

Results: The majority of respondents were male (62.3%), relatively more aged (41.0%), married (70.5%), and primary school educated (50.6%). More than 18 percent of respondents (144 people) said that they were unable to pay for the needed medical care. The variables lessening the quality

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of life for patients with coronary heart disease were found to be as female gender, increasing age, decreasing education level, living with a person with bad health status in the same house, inability to pay for medical care and living in statistical region-8 of Türkiye.

Conclusion: The results of this study contribute to the debate concerning the expected and unexpected relationships between QoL and its predictors among respondents with patients who have coronary heart disease. The study suggests that appropriate local and national policies should be developed to improve quality of life of coronary heart disease patients.

Keywords: Patient, Coronary Heart Disease, Quality Of Life, Predictors, Türkiye

INTRODUCTION

Coronary Heart Disease (CHD) is a major public health problem worldwide due to being one of the most common diseases and substantially contributing to the loss of health and excessing health system costs. It also is the most common cause of death in Türkiye (TUIK, 2019; WHO, 2020; Vaduganathan et al., 2022). CHD, which is a chronic disease, causes various problems that are experienced by the patient and his/her family. It reduces the independence of the individual since it limits physical, mental, health and social activities. This disease also needs long-term care and causes physical, psychological, social and economic problems (Virtanen et al., 2017; Sawan et. al., 2022; MPhil et al., 2021). For this reason, while making a treatment and care plan for CHD patients, it is important to take necessary measures to improve their quality of life (QoL). The purposes of care and treatment of CHD patients, which including pharmacological therapy, coronary angioplasty and stent placement and coronary artery bypass, are to relieve symptoms, to maximize function in daily life, to decrease economic and physical problems, and to achieve the highest level of QoL within the specific limits imposed by CHD (Sajobi et. al., 2018; Meesoonthorn et. al., 2016; Morys et. al., 2016). QoL is an indicator of health outcomes in CHD patients. The World Health Organization defines QoL as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad concept incorporating the persons' physical health, psychological state, level of independence, social relationships, personal beliefs and their relationships in a complex way to salient features of the environment (WHO, 2012). Assessment of patient-reported outcomes focuses on QoL, i.e., how physical, emotional and social well-being are affected by a disease or its treatment and her/his care. In addition, healthcare

professionals should focus on not only the physical aspect of their patients but also they should consider the quality of life taking into account physical, psychological, mental, and social aspects of life (Morys et. al., 2016; Imam and Jitpanya, 2022; Endalew et. al., 2021).

The relevant studies on CHD reveal that CHD patients experienced numerous physical problems including pain, fatigue, dyspnea, sleep disturbances or edema (Imam and Jitpanya, 2022; Endalew et. al., 2021; Shukla, 2021). In addition to physical problems, socioeconomic problems, that are high cost of CHD treatment, inability to return to work, dismissal, insufficient household income, loss of income, and social problems, which are limitations in patients and their families' social life, social isolation, re-admission to hospital, lack of social support, changing in lifestyle, are other common issues that CHD patients have witnessed (Endalew et. al., 2021; Shukla, 2021; Moonaghi et al., 2014). Fear of death and surgical intervention, the stress of disease recurrence, anxiety and depression are also important CHD-related psychological problems (Shukla, 2021; Moonaghi et al., 2014). In studies on the QoL of CHD patients, it has been reported that CHD disease and the problems associated with this disease reduced the quality of life of patients (Endalew et. al., 2021; Davranovna et. al., 2022; Dou et. al., 2022; Soleimaniet. Al., 2022).

It has been observed that there are studies examining the physical, socio-economic and psychological problems experienced by CHD patients. However, the number of studies investigating the predictors of QoL of CHD patients is limited in Türkiye. In addition to individual characteristics, household and regional-level characteristics might be important for QoL since these variables might disable CHD patients to access care and social support. In this study, the characteristics of the individual, the healthy living habits of the individual, the characteristics of the household and region in which the individual lives were grouped into four main groups and their effects on the quality of life were investigated gradually. The main aim of this study was to estimate more likely predictors of quality of life of respondents with CHD.

1. RESEARCH METHODOLOGY

1.1. Data and study population: This research was conducted in part at the national data source of the Turkish Statistical Institute (TUIK). The nationally representative Turkey Health Survey (THS-2019) is the source of data. THSs are conducted every two years to collect data on healthcare utilization and health status. THS-2019 was carried out among 8,166 households and more than twenty-three thousand (23,084) participants. As the present study focuses on QoL of respondents

with CHD, total 796 respondents having CHD disease in the last 12 months, and aging 15 and more were selected and included in the sample of this study.

1.2. Study questions: What are the predictors for quality of life of CHD patients?

1.3. Study variables: It is an obvious fact that QoL is a broad concept and it is affected by various factors including individual and community characteristics. For that reason, THSs include several questions to measure QoL of participants, However, this study considers the dimensions of Euro QoL to select and construct the QoL variable for the purposes of this study. EQ-5D was developed by the Euro QoL Group, and it includes five dimensions that are mobility, self-care, usual activities, pain, and anxiety status. Each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems and extreme problems (EUROQOL, 2021). The scores obtained from five dimensions is converted into a single score ranging 0 (death) and 1 (full health) by using of the composite time trade-off valuation technique. The questions about the mobility and pain dimensions in THS-2019 are almost similar to questions in EQ-5D, but there are more questions to measure the remaining three dimensions of EQ-5D. For this reason, the scores of dimensions of self-care, usual activities, and anxiety/depression in EQ-5D scale were constructed by taking the average of answers given to the questions under related dimensions in Table 2.

Many of the questions about QoL in THS-2019 are answered on a 4-point Likert-type scale while only answers to pain questions are obtained on a 6-point Likert-type scale. The estimated lower score based on the answers provided to the questions means better QoL while the higher score means bad QoL of CHD patients.

The independent variables were classified under four categories that are individual-level (age, marital status, education), individual-level healthy behaviors (walking, eating fruit and vegetable frequencies), household-level (general health status of 2nd person, inability to pay for medical care) and regions (Table 1).

1.4. Data analysis: Frequency, percentage, mean calculations, and standard deviation were used to describe variables. The effect of independent variables grouped under four categories on QoL of respondents with CHD was estimated by using nested regression in STATA. Nested regression fits nested models by sequentially adding blocks of variables and then reports comparison tests between the nested models (STATA, 2022).

1.5. Ethical considerations: The data used in this study was collected by the Turkey Health Survey (THS-2019) conducted by the Turkish Statistical Institute (TUIK). For this reason, official permission was obtained from TUIK for the use of these data.

2. ANALYSIS

2.1. Descriptive findings

Descriptive characteristics of respondents with CHD in the sample were provided in Table 1. The majority were male (62.3%), relatively more aged (41.0%), married (70.5%), and primary school educated (50.6%). The big majority (60.8%) stated that they walked less than one hour per day while 11.4% said they consumed fruit never or less than once a week. About 17% of respondents stated that there was another person in the household whose general health status was bad or very bad. More than 18 percent of respondents (144 people) said that they were unable to pay for the needed medical care. The geographic regions of Turkey in THS-2019 were classified under 12 categories according to Statistical Regional Units Classification. Almost one-fifth of respondents with CHD were living in Istanbul, which is the biggest city of Turkey.

Table 1. Descriptive Characteristics of CHD patients (n:796)

Variables			Frequency	Percent
Individual-Level	Gender	Male	496	62.3
		Female	300	37.7
	Age	15-24	2	.3
		25-34	44	5.5
		35-44	78	9.8
		45-54	146	18.3
		55-64	200	25.1
		65-74	187	23.5
		75+	139	17.5
	Marital Status	Single	16	2.0
		Married	561	70.5
		Widowed	45	5.7
		Divorced	174	21.9
	Education	Non-literate	120	15.1
		No formal education	57	7.2
		Primary school	403	50.6
		Secondary School	80	10.1
		High school	70	8.8
		Vocational school and more	66	8.3

Individual-Level Healthy Behaviours	Walking	10-29 minutes per day	326	41.0
		30-59 minutes per day	158	19.8
		1 hour to less than 2 hours per day	72	9.0
		2 hours to less than 3 hours per day	12	1.5
		3 hours or more per day	13	1.6
	Eating fruit frequency	Once or more a day	351	44.1
		4 to 6 times a week	133	16.7
		1 to 3 times a week	221	27.8
		Less than once a week	74	9.3
		Never	17	2.1
	Eating vegetable frequency	Once or more a day	444	55.8
		4 to 6 times a week	146	18.3
		1 to 3 times a week	173	21.7
		Less than once a week	27	3.4
		Never	6	.8
Household-Level	General health status of 2nd person	Very good	19	2.4
		Good	186	23.4
		Fair	226	28.4
		Bad	118	14.8
		Very bad	15	1.9
	Inability to pay for medical care	Yes	144	18.1
		No	636	79.9
		No need for health care	16	2.0
Regional	Region	Region -1	106	13.3
		Region -2	78	9.8
		Region -3	51	6.4
		Region -4	39	4.9
		Region -5	28	3.5
		Region -6	66	8.3
		Region -7	114	14.3
		Region -8	65	8.2
		Region -9	154	19.3
		Region -10	16	2.0
		Region -11	40	5.0
		Region -12	39	4.9

2.2. Findings on main and subdimensions of quality of life

Table 2 describes QoL variables and their sub-dimensions used in this study. The respondents with CHD reported that their mean score for mobility was 1.68 on a four-point scale. In addition, the self-care mean score was estimated as 1.22 which means that the respondents with CHD did not

have so much difficulty in doing their self-care activities. The respondents also stated that they had less difficulty for usual activities (1.49). The mean score of body pain was estimated as 3.47 in a six point-scale, while the mean score for overall anxiety/depression level was estimated as 1.78 in a 4-point scale. The overall QoL average was estimated to be 1.91, which can be interpreted as moderate level.

Table 2. Descriptive Statistics About Main and Subdimensions of Quality of Life (n:796)

Quality of Life Aspects	Sub Dimensions	Min	Max	Mean	Std. D.
1. Mobility	Mobility	1	4	1.68	0.86
2. Self-Care	Feeding	1	4	1.16	0.46
	Sleeping	1	4	1.24	0.57
	Dressing	1	4	1.22	0.55
	Using toilet	1	4	1.22	0.55
	Bathing	1	4	1.26	0.61
	Self Care (mean)	*1*	*4*	*1.22*	*0.51*
3. Usual Activities	Preparing food	1	4	1.34	0.80
	Using phone	1	4	1.27	0.68
	Shopping	1	4	1.50	0.94
	Using medicine	1	4	1.18	0.54
	Household work (light)	1	4	1.54	0.96
	Household work (heavy)	1	4	2.17	1.18
	Usual Activities (mean)	*1*	*4*	*1.49*	*0.70*
4. Pain/Discomfort	Pain/Discomfort	1	6	3.47	1.64
5. Anxiety/Depression	Having pleasure	1	4	1.81	0.94
	Bothered by feeling down, depressed	1	4	1.97	0.96
	Trouble falling or staying asleep	1	4	1.98	1.06
	Feeling tired or having little energy	1	4	2.11	1.02
	Poor appetite or overeating	1	4	1.66	0.93
	Feeling bad about yourself	1	4	1.65	0.95
	Trouble concentrating on things	1	4	1.59	0.90
	Feeling fidgety or restless	1	4	1.44	0.83
	Anxiety/Depression (mean)	*1*	*4*	*1.78*	*0.76*
Overall Quality of Life	General Quality of Life (Mean)	1	4.19	1.91	0.68

2.3. Findings on nested regression

The most likely predictors of QoL of CHD patients were estimated by using nested regression and the results were provided in Table 3. At the first stage, being female and increasing age were found to be statistically significant predictors decreasing the level of QoL of respondents with CHD while

increasing education level was a significant predictor increasing QoL of respondents with CHD. These four individual-level characteristics explained 20% percent of total variation measured with R^2.

At the second stage, the results yielded that healthy behaviors behaved in an expected way but their effects on QoL were found to be statistically insignificant. However, adding these three variables improved the model indices, and R^2 increased. Two variables capturing household-level effects were entered into the model at the third stage. Both variables were found to be statistically significant determinants of QoL of respondents with CHD. The results indicated that the respondents' QoL decreased if there was another person in their household whose general health status was bad. Inability to pay for medical care, was a significant predictor decreasing QoL compared to those who did not need to use medical care or those who was able to pay for medical care when they needed. Adding two household-level variables changed R^2 from 0.224 to 0.2618, and improved the model indices.

At the last stage, the region where respondents with CHD lived in was entered to the model. The variable of region was entered to the model at the last stage, and it was seen that the model was improved by additional 0.0489 increase in R^2. The results indicated that those respondents living in statistical Region-8 were more likely to have lower-level QoL compare to those who were living in Mediterranean Region. At the end, the independent variables categorized under four categories explained 26.03% of total variance in QoL of respondents with CHD.

Table 3. The Results of Nested Regression for Determinants of Overall Quality of Life of CHD Patients (N: 339)

Block (R^2; Change in R^2)	**Variables**	**Coefficient**	**Std. Er.**	**t**	**P>t**	**95% CI (Low-Up)**	
Block 1 (0.2044; 0.2044)	Gender (Female)	0.330	0.078	4.230	0.000	0.176	0.483
	Age	0.004	0.002	1.970	0.050	0.000	0.009
	Marital Status (Single)	Ref.					
	Marital Status (Married)	0.005	0.189	0.030	0.979	-0.368	0.377
	Marital Status (Widowed)	0.240	0.229	1.050	0.295	-0.210	0.690
	Marital Status (Divorced)	0.179	0.216	0.830	0.409	-0.247	0.605
	Education	-0.058	0.022	-2.610	0.010	-0.102	-0.014
Block 2 (0.224; 0.0196)	Walking in hours	-0.016	0.026	-0.620	0.538	-0.067	0.035
	Eating fruit frequency	0.034	0.025	1.380	0.168	-0.014	0.083
	Eating vegetable frequency	0.048	0.030	1.620	0.107	-0.010	0.106

Block 3 (0.2618; 0.0378)	General health status of 2nd person	0.075	0.032	2.320	0.021	0.011	0.138
	Inability to pay for medical care (Yes)	Ref.					
	Inability to pay for medical care (No)	-0.216	0.075	-2.900	0.004	-0.363	-0.069
	Inability to pay for medical care (No needed health care)	-0.355	0.173	-2.050	0.041	-0.695	-0.015
Block 4 (0.3107; 0.0489)	Region -1	Ref.					
	Region -2	0.016	0.115	0.140	0.887	-0.210	0.243
	Region -3	-0.067	0.126	-0.530	0.599	-0.315	0.182
	Region -4	-0.209	0.159	-1.320	0.189	-0.522	0.103
	Region -5	-0.172	0.166	-1.040	0.301	-0.500	0.155
	Region -6	-0.216	0.118	-1.830	0.068	-0.449	0.016
	Region -7	0.078	0.110	0.710	0.481	-0.139	0.294
	Region -8	0.339	0.139	2.440	0.015	0.066	0.612
	Region -9	-0.072	0.095	-0.760	0.447	-0.259	0.114
	Region -10	0.031	0.223	0.140	0.891	-0.409	0.470
	Region -11	-0.048	0.131	-0.370	0.712	-0.306	0.209
	Region -12	0.065	0.123	0.530	0.596	-0.177	0.308
	Constant	1.372	0.262	5.240	0.000	0.857	1.887
Model Indices	**F: 6.17; Prob > F: 0.0000; R2: 0.3107; Adj.R2: 0.2603)**						

3. DISCUSSION

It is clear that both CHD itself and the complications and problems that are associated with CHD negatively affect the quality of life. According to the results of this study, the general QoL of respondents with coronary heart disease in Türkiye can be described as close to moderate ($\bar{x}$: 1.91 SD± 0.68) (Table 2). The scores obtained for sub-categories of QoL also indicate a mild or moderate level. For CHD patients in Türkiye and other countries, previously reported QoL scores obtained from EQ-5D range between 0.61 and 0,903 (Annac, 2018; Mert et. al., 2016). The results of a follow-up survey in Finland conclude that the respondents most commonly reported pain and discomfort while managing self-care was least likely to be an issue when the sub-components of EQ-5D were investigated separately (Kähkönen et. al., 2022). Smedt et al. (2016) conducted a study in 24 European countries to study validity and reliability of a tool measuring quality of life of stable coronary patients by using 14 questions under two sub-dimensions which are physical and emotional. They reported relatively bad score (2.30±0.72) for emotional dimension while better score (2.13±0.72) for physical dimension. It can be discussed that CHD patients in Türkiye

have similar problems and QoL level when the results of other studies in other countries are considered.

The results of nested regression showed that increasing education level was a significant factor increasing QoL of CHD patients. It is common to see that patients having coronary heart disease with higher levels of education reported better QoL (Soleimani et. al., 2022; Mei et. al., 2021; Mandal et. al., 2016). Increasing education level might have a positive impact on disease management and self-care and coping with the problems caused by CHD since better educated patients are more likely to possess a decent job, earn a good income, and enjoy better social status. Furthermore, people with higher levels of education may be expected to have greater compliance with the disease and have better adherence with treatment plans (Soleimani et. al., 2022; Mandal et. al., 2016; Li et. al., 2016).

Aging is a complex process, typically associated with multiple losses in physical health due to functional disorders, chronic diseases and disabilities gradually increase with age. The reason for the decrease in QoL with increasing age can be explained by adding CHD-related problems with the above-mentioned limitations, changes and problems that occur with aging (Virtanen et. al., 2017; MPhil et al., 2021; Imam and Jitpanya, 2022; Dou, 2022; Mei et al., 2021; Zhang et. al., 2021).

The evidence related to the association of gender with QoL gives mixed signals. In current study, QoL was significantly lower among female. There are other studies indicating that QoL score of female CHD patients was lower than that of male patients (Mei et. al., 2021; Zhang et. al., 2021; Conradie et al., 2021; Lei et al., 2022). There are also some other studies in which there is no statistical difference between male and female gender in terms of QoL (Dou et. al., 2022; Mert et. al., 2016; Sudevan et. al., 2020). The gender-based difference in the current study could be due to the fact that the female could have been feeling more responsibility to deal with their own care as well as household responsibilities such as cleaning or cooking, and they might not get enough social support in Turkish culture (Çelik, 2020).

The income level was another important predictor of QoL in CHD patients. In this study, inability to pay for medical care was found to decrease the level of QoL significantly. This finding is supported by some other studies in developing countries (MPhil et. al., 2021; Shukla et. al.,

2021; Moonaghi et. al., 2014). It should not be difficult to estimate how poor people feel when they are not able to access to the needed care, and the QoL would be bad due to financial and psychological burden.

The quality of life is affected by many factors stemming from the regional differences. People living in relatively poor regions are more limited to access to better education, health services, and economic opportunities, and all these poor indicators might have a negative effect on the quality of life. It is expected that these poor indicators may have more negative effect on people with chronic diseases and their QoL (Mei et. al., 2021; Şeker et. al., 2014; Zhou et. al., 2018; Çağlar, 2020). Türkiye, as a developing country, social and economic problems increase as a result of the inequality in the distribution of resources and the welfare and living conditions offered to the population masses, which is one of the main problems of developing countries, and this negatively affects the quality of life although Türkiye has a very generous health system. The current study showed that living in Region-8, which is one of the 12 statistically classified regions, caused to decrease QoL of CHD patients significantly. This study highlights the importance of the QoL of CHD patients in relatively less developed areas. This well-known fact is not specific to Türkiye. For instance, the study of Zhou et al. (2018) reported that rural people had have worse HRQoL than people living in urban areas of China.

Physical condition of house and characteristics of family also play a significant role for QoL (WHO 2012; Shukla et. al., 2021; Soleimani et. al., 2022; Zhang et. al., 2021). Having another household member with bad health status was found to be a significant predictor of QoL of CHD patients. According to the study results, having someone else with bad general health status in the family worsens the QoL of the CHD patient. In the literature review, no study was found on this predictor that could affect the quality of life. It is thought that this study will contribute to the literature with this aspect. While both the physical and psychosocial problems, limitations and obstacles caused by the chronic disease of the patient with CHD reduce the quality of life of these patients, at the same time, the poor health status of another member of the family may negatively affect the patient with CHD in this situation where they both need family support. Having more than one patient in the same household can cause problems to double since the burden of problems such as social, economic, patient care, housework, fear, anxiety, and depression are

felt more by patients and other household members, and this may lead to a worsening QoL of the patients.

Three healthy life style behaviors were used in nested regression since their effect are examined frequently as predictors of QoL of CHD patients other studies in related literature (Mei et. al., 2021; Alaofè, et. al., 2022; Fanning et. al., 2022; Motton et. al., 2022). However, the results showed that regular walking and healthy eating behaviors did not have a statistically significant effect on QoL. Even the findings were unexpected, there are some studies finding there is no statistically significant relationship between QoL of CHD patients and health behavioral/promoting factors (Meesoonthorn et. al., 2022; Kähkönen et. al., 2022). It can be concluded that other set of variables might be more important in predicting QoL of CHD patients in this study.

4. CONCLUSION AND RECOMMENDATIONS

CHD causes the most of deaths in 2019, it has never allowed another disease to be at first rank for years (IHME, 2019), and it will continue to lead causing more death in the future of Türkiye. The burden of CHD in terms of physical, emotional and financial is expected to be more severe because Türkiye's population is getting older. Developing appropriate measures in lessening the expected burden of CHD will be critical to be ready for the health and social system of Türkiye. For that reason, this study purposed to estimate more likely predictors of QoL of CHD patients to allow decision makers take necessary measures in more likely areas that would improve the QoL of CHD patients.

As the results indicated, individual level patient characteristics, lessening the burden of women stemming from cultural factors and improving health literacy by dealing with daily care requirements related to CHD might be appropriate measures to be taken. Health care and social service problems caused by increasing age should be routed to somewhere else rather than the families. If the burden of CHD is left to the families, it lowers not only the QoL of CHD patients but also the QoL of other family member that might have other diseases. When the burden of other diseases in a family combines, the result would be catastrophic in terms of financially and emotionally.

Although Türkiye implements general health insurance scheme to cover health care costs of its citizens, and it is more generous to cover many medicine and health care costs, it is important to see that there are some CHD patients that are not able to access the needed care due to financial problems. The long-term effects of a chronic disease such as CHD may put more financial burden on people by meeting their needs to pay more from their out-of-pocket. If long-term financial effects of CHD are lessened, CHD patients may be less worried about their healthcare and medical costs. Therefore, they may experience less anxiety and higher QoL. Further, increasing ability to pay for medical care, or lessening financial burden of disease increases patients and their family' satisfaction and they experience a feeling of not being financially dependent on someone else (Soleimani et. al., 2022; Lapid et. al., 2016).

This study also highlights the importance of the QoL of CHD patients in relatively less developed areas, which should encourage the government to focus more on the systematic management of CHD patients in rural areas. The results of this study contribute to the debate concerning the expected and unexpected relationships between QoL and its predictors among respondents with CHD. Creating alternative social and care organizations that are expected to provide better social services and needed health care is necessary to improve QoL of CHD patients. This study suggests that appropriate local and national policies should be developed to improve QoL of CHD patients. These policies should be coordinated under the framework of national chronic disease management policies that bridge health, social, and economic issues. In addition, it is recommended that researches in the future is conducted to examine the effects of policy-related measures to increase QoL and to find the root causes of problems that are more likely to decrease QoL of CHD people.

This study has mainly three limitations. First, the study was a retrospective one, with the usual limitations of inaccurate recall of past events. Second, results of this study cannot be generalized to all CHD people in Türkiye due to including respondents with CHD in the last 12 months, and aging 15 and more in the sample of this study. Third, although this study used a nationally representative and rich data, it may not let the researchers test the effects of different predictors QoL.

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The Relationship Between Queen Bee Syndrome and Leadership: A View To Healthcare Institutions

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Abstract

Aim: The purpose of this study was to investigate into the perception of "Queen Bee Syndrome" among female healthcare workers employed in healthcare industry, followed by an analysis of the relationship this syndrome has with female healthcare workers' perception of "Leadership", and to pinpoint the differences in queen bee syndrome according to certain socio-demographic characteristics.

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Methods: Designed as a cross-sectional study, this research had a sample of 515 female healthcare workers. Research was conducted from December 2021 to March 2022 on female healthcare workers employed in Ordu province. Data was collected using "Personal Information Forms", the "Queen Bee Phenomenon Scale", and "Multifactor Leadership Questionnaire". SPSS version 23.0 and AMOS 23 statistical package programs were used for data evaluation.
Results: The results of this study revealed a negative and statistically significant relationship between Queen Bee Phenomenon Scale subdimensions and MLQ subdimensions, suggesting that the higher the perception of queen bee syndrome among female healthcare workers, the lower their perception of leadership.
Conclusion: As a result of this study, a significant inverse relationship was found between sub-dimensions of the Queen Bee Phenomenon Scale and subdimensions of the Multifactor Leadership Questionnaire.

Keywords: Queen Bee Syndrome, Leadership, Female Managers, Healthcare Institutions, Female Workers

INTRODUCTION

The metaphor of "queen bee", inspired by the Bee Colony, is used to describe the behavior of women in senior management positions who have achieved their goals. The most basic behavior pattern of female managers with Queen Bee Syndrome is that female managers who adapt to this masculine culture and rise to senior management positions in organizations where predominantly men dominate the management levels, see other women as rivals and treat them with distance (Staines et al., 1974; Derks et al. 2016). A leader is a person who has followers (Drucker, 1996), and uses power to influence other people's thoughts and actions (Zalenik, 1992). Leadership, on the other hand, is the interaction process between two or more members of a group, which includes the regulation or restructuring of perceptions and expectations (Bass, 1990).

As in almost all sectors in the world, the rate of female managers is very low (11%) in the health sector, where female employees are heavily employed (Kaya and Alkan, 2021). Some of the few female leaders who can reach the top management are exposed to the Queen Bee Syndrome, and instead of helping their fellows, they show hostility towards them. It is a paradox that is difficult to explain that female employees who cannot rise to the top due to the effects of variables such as glass ceiling syndrome, role conflict and masculine culture, are also prevented by their own sex with the queen bee syndrome (Kılıç and Çakıcı, 2016; Yücelen and Özen, 2010).

In this context, as a result of the relationship between the Queen bee syndrome and leadership concepts discussed in this study, it will be determined how this negative situation experienced by the employees who apply and be exposed to the Queen bee syndrome affects their Leadership skills and a scientific approach will be developed to overcome this. Due to the high number of female employees, this sector was chosen as a research area. On the other hand, the number of studies dealing with Queen bee syndrome and leadership in the health sector is limited in the literature. This study has the potential to fill this gap.

In this direction, the main purpose of this study is to examine the effect of the queen bee syndrome perceived by women working in the health sector on the leadership behaviours of the managers against them from the perspective of the employees.

1. CONCEPTUAL FRAMEWORK

1.1. Queen Bee Syndrome

Queen bees are senior women in masculine organizational cultures who have fulfilled their career aspirations by dissociating themselves from their gender while simultaneously contributing to the gender stereotyping of other women (Derks et al., 2011a). Queen bee syndrome is a management style by female managers, where they oppress and ignore other female workers (Karakuş, 2014). In this syndrome, business life is likened to a beehive. Just as there is a need for a leader to manage a business, there is a need for a queen bee to ensure continuity and order in the hive (Özülke, 2016). Just as the queen bee fighting to stay in power of the hive, the female manager fights a similar fight (Taşdelen-Baş, 2019). A previous study showed that the queen bee effect was more common in senior management positions (Groot, 2010). Successful female professionals tend to view other women as rival. Once a senior woman sees other women as her rival, she may become prejudiced against other women and even resort to intimidating practices such as exposing them to mobbing, excluding them, not supporting them, and making them unhappy (Karakuş, 2014; Baykal, 2018; Cevher and Öztürk, 2015; Öztürk and Cevher, 2015).

Several studies found that women in professional roles described themselves as masculine, and that they exhibited masculine traits as a leadership style (Cuadrado-Guirado et al., 2015; Faniko et al., 2016; Kremer et al., 2019; Faniko et al., 2020; Neto et al., 2020). When queen bees are successful, they want other women to face and overcome the same challenges and hardships

they did, to make the same effort, to put in the same amount of hard work for years and endure the same amount of stress before they hit the top, and to suffer just the way they did. Hence, they are reluctant to support and mentor their junior counterparts (Derks et al., 2011b; İmamoğlu- Akman & Akman, 2016; Kılıç & Çakıcı, 2016; Nelson, 2016; Baykal, 2018; Permatasari & Suharnomo, 2019; Tolay, 2020). So even if queen bee behaviour can seem to be beneficial for women in achieving career success in the short term, in the long term, it may come with substantial costs that result in under-presentation of women leaders in senior positions compared to their male peers (Derks et al., 2016).

Since female managers with queen bee syndrome focus on individual female behaviours, they exhibit inhibitive behaviour against other women in order to maintain their position and achieve further progress (Mavin, 2008). Queen bee is a bad image and in workplaces taken hold of by this syndrome, people coming up with brilliant ideas may be ignored, dispraised, and attacked by the queen bee. The queen bee phenomenon is considered not healthy as it may hamper innovative work in the workplace. This type of behaviour may make women look bad (Hasabnis, 2017).

1.2. Previous Research on Queen Bee Syndrome

The conception of "queen bee syndrome" emerged from a study conducted by University of Michigan researchers, Staines et al. (1974). In their study, Cevher and Öztürk (2015) revealed that queen bee syndrome was among the causes of woman-on-woman bullying at work. In a study conducted on 315 female managers in Switzerland, Faniko et al. (2016) concluded that queen bee syndrome was, in most cases, not mere competitive attitude or behaviour toward all women. In a study conducted in the education sector by İmamoğlu-Akman and Akman (2016) on 14 female teachers by interview, the interviewees expressed that female managers failed to establish authority, that they did not support their subordinates, that they were underexperienced, jealous, hypercritical, and capricious, and that they had a negative attitude towards female managers due to the effect of queen bee syndrome.

In a compilation study on queen bee syndrome, Derks et al. (2016) reported that women evolved into queen bees as they climbed the career ladder in a male-dominated workplace, that they distanced themselves from their subordinates, legitimized gender inequality, and assimilated into male-dominated organizations. In her master's thesis, Wuertele (2017) investigated the causes

of queen bee syndrome, actively opposing the rise of women, and examined the effect of queen bee syndrome on Gen Y attitudes, behaviours, and leadership styles. Karatepe and Arıbaş (2017) conducted a study on the obstacles to the advancement of women and the reasons underlying those obstacles, concluding that queen bee syndrome was among the reasons why women could not come to senior management positions. In a conceptual evaluation study, Baykal (2018) described queen bee syndrome as a shift of perception in the minds of women due to the society being dominate by man.

A study by Kremer et al. (2019) asserted that queen bees described themselves as masculine while climbing the career ladder in male-dominated workplaces, while female subordinates would show themselves more feminine. In a study by Dopwell (2019), it was observed that familial connections were important for women in pursuing a career, that they had influence on the mental and emotional well-being of minority subordinates at work, and that they had queen bee effect. In a qualitative study conducted in Indonesia, Permatasari and Suharnomo (2019) found that queen bee leaders were intimidating and did not support female workers. It was found that the negative effects of queen bee syndrome outweighed the positive effects, that it put workers under stress, created an unfavourable and uncomfortable work environment, and caused disruption in company activities. A qualitative study conducted at a private university in South Africa confirmed the existence of the queen bee syndrome, asserting that it occurred as a result of social norms overflowing to the workplace (Zandria et al., 2020).

In a study by Neto et al. (2020) conducted on 405 female participants to investigate the existence of the queen bee phenomenon in higher education institutions in Brazil, it was observed that women in leadership positions were more engaged in work than other women, that they were more masculine, rejected gender discrimination, and were loyal to their queen bee traits. Çelen and Tuna (2021) developed a scale in a study they conducted on 134 participants in accommodation enterprises. As a result of the study, they determined that female employees believed that female managers in the enterprise posed an obstacle to other women subordinated to them, that they found female managers unsuccessful and had no positive thoughts about having a female manager, and that they rather preferred working with male managers. In a qualitative study conducted in the private sector, Yasbay-Kobal (2021) found that female managers supported their subordinates in climbing the career ladder and did not exhibit any queen bee behaviour. Ünal et al. (2022) conducted a study on 244 female participants working in accommodation establishments to

determine the perception levels of glass ceiling and queen bee syndrome and which of these concepts had more impact. As a result of that study, it was found that all dimensions of relevance for these two concepts had a certain level of effect on female workers.

As can be seen from the information obtained in the literature through studies conducted in recent years, the queen bee syndrome has been a research topic in numerous sectors and countries. Research on the concept of the queen bee has been construed that the obstacle standing in the way of women's advancement in business life is not men, but women. From the day of its conception, queen bee syndrome has been a research topic to several studies in a variety of application areas and in association with various concepts. It is considered that more studies should be done in this field.

1.3. Leadership

Leadership has been a subject of intense interest to sociologists, social scientists and researchers throughout history and has been researched in many different fields. From the 1950s onwards, research on leadership gained even more popularity and it is known that there are many definitions in the literature on the concept of leadership. In simplest terms, leadership is the power to influence people and their behaviour. The leader, on the other hand, is often the person who has the greatest influence on the activities and beliefs of the organization, tries to solve problems both in and outside the organization, gives orders, makes decisions, and passes judgments (Gökalp, 2008).

1.4. Relationship between Queen Bee Syndrome and Leadership

For women in senior management positions, queen bee syndrome is to maintain their existence as leadership positions bring with them a certain aspect of power. Leaders are expected to motivate, mobilize, and influence their followers. In other words, they must exert dominance in order to motivate and push followers to accomplish their tasks. At this very point, this power and dominance behaviour of leaders can often be misinterpreted. It can even happen that people in a leadership position are stamped as a queen bee. Leaders may be accused of displaying a toxic and overbearing leadership style. This perspective to leadership, accusing the leader to have been poisoned by power, aligns with the understanding that ‘power corrupts even the best among us’ (Wuertele, 2017). Queen bee effects in the workplace may originate from the different ways women employ to establish relationships due to their gender and the sexist stereotypes associated

with female leadership (Ellemers et al., 2012). In environments with few female leaders, women in top positions bear the burden of representing all women, and they may adopt masculine traits (e.g., dominance and toughness) to better fit in with their male peers. In fact, the less controlled women feel, the more they promote other women (Salles and Choo, 2020). The queen bee is a woman who does not help other women. Women in leadership positions can achieve success by attaching themselves to a mentor who helps them at the most critical point in their lives to improve their leadership skills (Rossbacher, 2013).

In this context, it is possible that the leadership perception of women with the perception of queen bee syndrome will also decrease. Because female leader candidates with queen bee syndrome cannot develop their leadership skills by losing their self-efficacy as a result of the queen bee behaviours they are exposed to. Based on this theoretical explanation, the following models and hypotheses have been developed.

2. RESEARCH METHODOLOGY

2.1. Model and Hypotheses of Research

The hypotheses created according to the research model are stated below:

H1: Queen bee syndrome perception has an effect on leadership.

H2: Support subdimension differs significantly according to marital status.

H3: Structure subdimension differs significantly according to marital status.

H4: Support subdimension differs significantly according to job title.

H5: Structure subdimension differs significantly according to job title.

H6: Support subdimension differs significantly according to manager preference.

This research was planned to examine the relationship between queen bee syndrome and leadership (Figure 1). The model of research was as shown below:

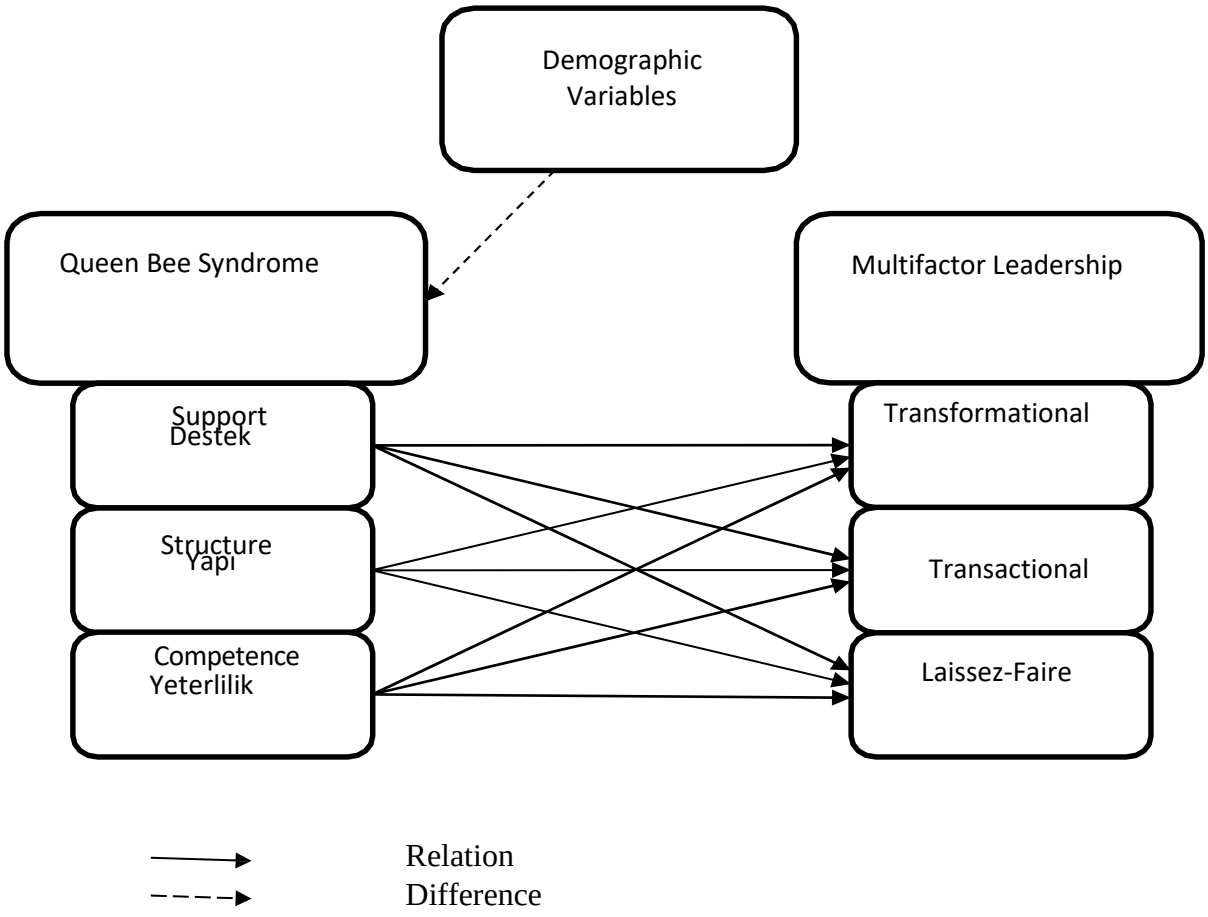

Figure 1. Research Model on the Relationship between Queen Bee Syndrome and Leadership Perceptions among Female Healthcare Workers.

2.2. Population and Sample of Research

The population of this cross-sectional study consisted of female healthcare workers working in Ordu, Turkey. Among the non-probability sampling techniques, the convenience sampling method was chosen and first contact with the sample was established through an online questionnaire, followed by a face-to-face questionnaire. According to the information obtained, it was determined that there were a total of 4448 female health workers in Ordu. To identify the minimum required sample number, the sample calculation formula for populations of known number was employed (Yazıcıoğlu and Erdoğan, 2004). Accordingly, it was calculated that a minimum of 354 health workers needed to be reached, and as a result of data collection, a total of 515 people were reached, going beyond the initial number targeted. The sample was determined by paying attention to the coverage of all education levels, age, units and hospitals.

2.3. Data Collection Tools of Research

Research data was collected using "Personal Information Forms", the "Queen Bee Phenomenon Scale", and "Multifactor Leadership Questionnaire".

Personal Information Form Comprised 9 variables aimed at identifying the participants' personal characteristics, including age, educational background, job title, professional experience, income level, marital status, managerial experience, type of manager they prefer working with, and type of manager they find successful.

Queen Bee Phenomenon Scale This scale was developed by Çelen and Tuna (2021) to determine the perception of queen bee syndrome among female employees. The scale consists of 3 subdimensions (support, structure, and competence) and 27 items. The scale is of a 5-point Likert type. The higher the score, the higher the perception of queen bee syndrome.

The Scales have the necessary reliability and validity results.

Multifactor Leadership Questionnaire (MLQ) The scale, developed by Bass and Avolio in 1990, was adapted into Turkish by Akdoğan (2002). MLQ is a 5-point Likert scale comprising a total of 36 items and 3 factors (transformational leadership, transactional leadership, and laissez-faire leadership).

These surveys measure the queen bee syndrome and leadership perceptions of female health workers towards female managers from the perspective of the employee.

Analysis of Data: Data were evaluated using SPSS, version 23.0 statistical package program. AMOS 23 package program was used to determine the validity of data collection tools. As a result of the examination of the skewness and kurtosis values, it was seen that the data exhibited a normal distribution. The descriptive characteristics of the sample are given using number, percentile distribution, mean and standard deviation. While ANOVA and t-test were used to compare parametric variables, path analysis was used to search for relationships. Therefore, this study addressed the issue (Table 1, Table 2, Table 3, Table 4, Figure 1, Figure 2).

3. ANALYSIS

Table 1 Distribution of Demographic Characteristics (n=515)

Variable	Category	n	%
Age	18-24	73	14.2
	25-34	133	25.8
	35-44	193	37.5
	45 and above	116	22.5
Marital Status	Married	355	68.9
	Single	160	31.1
Income Level	2999 and below	38	7.4
	3000-5999	173	33.6
	6000 and above	304	59.0
Educational Background	High School	82	15.9
	Associate degree	116	22.5
	Bachelor's degree	268	52.0
	Postgraduate	49	9.5
Job title	Midwife-Nurse	240	46.6
	Health Officer	120	23.3
	*Other	155	30,1
Professional Experience	0-10 years	201	39.0
	11-20 years	166	32.2
	21 years or more	148	28.7
Managerial Experience	Yes	124	24.1
	No	391	75.9
**Manager Preference	Female manager	130	25.2
	Male manager	206	40.0
	Both	179	34.8
Manager Found Successful	Female manager	134	26.0
	Male Manager	213	41.4
	Both	168	32.6

*Other = Physician, dentist, physiotherapist, audiometrist, pharmacist

**Type of manager preferred working with

14.2% of the sample were in the age range of 18-24 years, 25.8% were in the age range of 25-34 years, 37.5% were in the age range of 35-44 years, and 22.5% were aged 45 years and above. A significant part of the sample (68.9%) consisted of married individuals, whereas 31.1% were single. Looking at mean income levels, it can be seen that the sample's average income was mainly between 3000-5999 TL (33.6%) and 6000 TL and above (59.0%). In average, half of the sample (52.0%) had a bachelor's degree, while the rate of individuals with an associate degree was 22.5%. Nearly half of the sample consisted of midwives-nurses (46.6%), while the rate of health officers and others was calculated to be 23.3% and 30.1%, respectively. Looking at professional experience, it can be seen that the rates of all categories were close to each other. The rate of individuals with 0-10 years of experience was 39.0%, those with 11-20 years of experience was 32.2%, and the rate of those with 21 years or more of experience was 28.7%. While the majority of the sample (75.9%) did not have managerial experience, 24.1% had managerial experience. With regard to manager preference, it can be seen that 25.2% of the participants stated they would prefer working with a female manager, 40.0% with a male manager, and 34.8% stated both. In terms of the manager type perceived successful according to gender, the participants reported that they found male managers more successful than female managers. 41.4% of the participants found male managers successful, 26.0% female managers, and 32.6% both (Table 1).

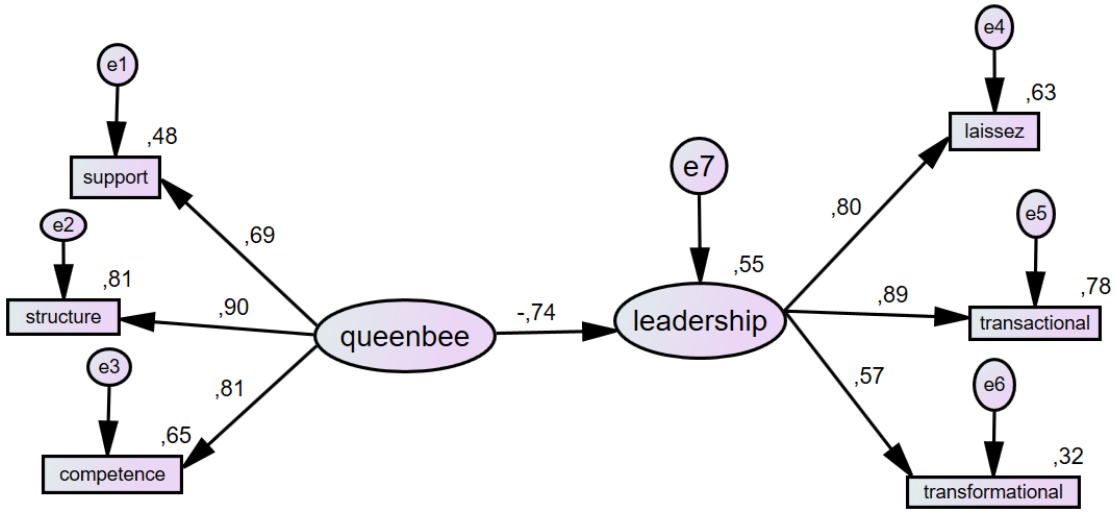

Figure 2. Diagram 1. The Relationship Between Queen Bee Syndrome Perception and Leadership

Quen bee: perception of queen bee syndrome; leadership: multidimensional leadership; support:

Queen bee syndrome perception support sub-dimension; structure: queen bee syndrome perception support sub-dimension; competence: perception of queen bee syndrome competence sub-dimension; laissez: multi-factor leadership scale sub-dimension of liberal leadership; trafsformational: multi-factor leadership scale transformational leadership sub-dimension; transactional: multi-factor leadership scale, continuity leadership sub-dimension (Gürbüz and Şahin, 2015; Meydan and Şeşen, 2011; Sümer, 2006).

In order to examine the relationship between the perception of queen bee syndrome and leadership, a model was established, and goodness of fit values were examined. According to the findings, the model's goodness-of-fit values were found at the desired level and were considered significant. When the goodness of fit values of the model are examined, x2 /df: 4.15; AGFI: .90; GFI: .96; CFI: .97; RMSA: .07 and NFI: .96 values, so it was understood that the initial structural model met the values of goodness of fit as a whole. When the path between queen bee perception and leadership was examined, it was observed that there was an inverse and significant relationship (t=-10,631, p<0.001). According to this finding, as the perception of queen bee syndrome increases, the leadership score decreases. Accordingly, Hypothesis H1 was accepted. Therefore, this study addressed the issue (Figure 2).

Table 2. T-Test Results by Marital Status

Factor	Category	n	Mean	Ss	Significance
Support dimension	Married	355	3.02	.60	t=3.183
	Single	160	2.84	.59	Sig=.002
Structure dimension	Married	355	2.94	.72	t=1.718
	Single	160	2.83	.73	Sig=.087

T-test analysis of the sample's mean scores in Queen Bee Phenomenon Scale support subdimension according to marital status showed that the mean score of married individuals ($\bar{x}$ =3.02) was statistically significantly higher than the mean score of single individuals ($\bar{x}$ =2.84) (Sig.<.05). Accordingly, **Hypothesis H2 was accepted.**

T-test analysis of the sample's mean scores in Queen Bee Phenomenon Scale structure subdimension according to marital status showed that the difference was insignificant (Sig>.05). Accordingly, **Hypothesis H3 was rejected. Analyzes based on marital status were discussed (Table 2).**

Table 3. ANOVA Test Results by Job title

Factor	Category	n	Mean	Ss	Significance
Support dimension	Midwife-Nurse	240	3.05	.56	F=1.549
	Health Officer	120	2.90	.60	Sig=.040
	Other	155	2.89	.65	
Structure dimension	Midwife-Nurse	240	3.03	.66	F=2.222
	Health Officer	120	2.84	.70	Sig=.007
	Other	155	2.77	.71	

ANOVA analysis of Queen Bee Phenomenon Scale support subdimension score differences according to job title is given in the table above. A comparison of the groups' scale mean scores showed that the scale mean score of the midwife-nurse group ($\bar{x}$ =3.05) was statistically significantly higher than the health officer ($\bar{x}$ =2.90) and other job title group ($\bar{x}$ =2.89) (Sig.<.05). Accordingly, **Hypothesis H4 was accepted.**

ANOVA analysis of Queen Bee Phenomenon Scale structure subdimension score differences according to job title is also given in the table above. A comparison of the groups' scale mean scores showed that the scale mean score of the midwife-nurse group ($\bar{x}$ =3.03) was statistically significantly higher than the health officer ($\bar{x}$ =2.84) and other job title group ($\bar{x}$ =2.77) (Sig<.05). Accordingly, **Hypothesis H5 was accepted (Table 3).**

Table 4. ANOVA Test Results by Manager Preference

Factor	Category	n	Mean	Ss	Significance
Support dimension	Female manager	130	2.56	.56	F=2.441
	Male manager	206	3.29	.51	Sig=.000
	Both	179	2.89	.51	

According to ANOVA analysis of the sample's mean scores in Queen Bee Phenomenon Scale support subdimension according to the type of manager they preferred working with; the difference between groups was found to be statistically significant (Sig. <.05). The findings showed that the Queen Bee Phenomenon Scale mean score ($\bar{x}$ =2.74) of those who prefer working with a male manager was statistically significantly higher than the mean score of those who preferred working with both ($\bar{x}$ =2.35) and those who preferred working with women ($\bar{x}$ =2.27). Accordingly, **Hypothesis H6 was accepted. Manager preference was also evaluated (Table 4).**

3. DISCUSSION

In this study, a negative and statistically significant relationship was found between queen bee syndrome subdimensions and leadership subdimensions. The limited number of studies in the literature investigating in to the queen bee syndrome including its subdimensions makes the present research even more so important. İmamoğlu-Akman and Akman (2016) conducted a study that qualitatively examined the queen bee syndrome with focus on support, structure, and competence. Çelen and Tuna (2021) examined the differences between subdimensions of queen bee syndrome and demographic variables, while Ünal et al. (2022) made an analysis that addressed the concept of glass ceiling together with the subdimensions of queen bee syndrome. The studies mentioned here are similar to the present study and they are in accord with other previous studies (Derks et al., 2011b; Öztürk and Cevher, 2015; Cevher and Öztürk, 2015; Akdöl and Menteş, 2017).

It was found that the perception of queen bee syndrome support subdimension differed significantly according to marital status, but not in terms of structure subdimension, suggesting that married individuals have a higher perception of queen bee syndrome as they have more family responsibilities compared to single individuals and do not receive support for becoming a manager. The result obtained on perception of support dimension is similar to the results obtained in other studies (Derks et al., 2011b; Öztürk and Cevher, 2015; İmamoğlu-Akman and Akman, 2016; Şengül et al., 2019; Çelen and Tuna, 2021). However, Çelen and Tuna (2021) found in their study significant differences between the marital status variable and structure dimension.

It was found that the perception of queen bee syndrome support dimension differed significantly according to job title. Midwives and nurses have a higher perception of this dimension than other occupational groups. A possible reason could be that they do not receive support from their managers. Also, it is thought that their negative thoughts about their managers possibly stem from their past experiences. Çelen and Tuna (2021) obtained similar results in terms of the job title variable. Likewise, in a qualitative study conducted on nurses, Şengül et al. (2019) found that female managers were more suitable for managerial positions in healthcare services, but that the presence of more than one female manager could cause competition and conflict in the workplace, and this was more prevalent especially in female managers of the same status.

It was found that the perception of queen bee syndrome support dimension differed

significantly according to manager preference. Female workers tend to prefer working with a male manager (Bickford, 2011). In a study by Stoker et al. (2012), it was found that managers are usually stereotyped as masculine, and that female employees, mostly female managers, preferred working with male managers. In other studies, it was found that the perspective and attitude toward female managers in the education and tourism sectors was negative (İmamoğlu- Akman and Akman, 2016; Hurst et al., 2018; Çelen and Tuna, 2021; Mert, 2022). Studies show that employees prefer working with male managers in workplace environment (Cevher and Öztürk, 2015; İmamoğlu-Akman and Akman, 2016; Tolay, 2020; Çelen and Tuna, 2021; Mert, 2022).

4. CONCLUSION AND RECOMMENDATIONS

In this study, the relationship between queen bee syndrome perceptions and leadership perceptions of female health workers working in the health sector was examined. Female managers are discussed from the perspective of female employees. The aim of the study is to evaluate the views of female health workers regarding female managers in the context of queen bee syndrome. No other study has been found that examines this concept together with leadership. In addition, there is a scarce number of studies on queen bee syndrome in the health sector. This study provides new information to the field.

Research was limited to female healthcare workers working in Ordu province, and hence, it is not possible to generalize the results.

The results of this study revealed a negative and statistically significant relationship between Queen Bee Phenomenon Scale subdimensions and MLQ subdimensions, suggesting that the higher the perception of queen bee syndrome among female healthcare workers, the lower their perception of leadership.

Female employees who perceive queen bee syndrome in their managers in the health sector may think that their managers see themselves as competitors, complicate their work and treat them inappropriately. Just as the only dominant queen bee in the hive is the female manager in the health sector, female employees who perceive that the dominant person is the female manager may see that they have a low chance of rising to the top and may think that they are not given a job opportunity. It is suggested that the perceptions of female employees working under queen bee pressure and stress should be investigated in more detail.

Trainings on topics like self-esteem, leadership, and mentorship should be given to female managers and female workers to reduce queen bee syndrome.

Married individuals were found to have a higher perception of queen bee syndrome support subdimension than singles, and midwives-nurses than other job title groups, based on which it was concluded that married individuals and midwives-nurses were less supported by their families and managers. This being case, it can be said that the said groups experience more conflict and competition in their workplaces and have a negative perspective toward female managers. This dimension showed that female workers did not receive support in their workplace and private life, and that conflict between women is more common. Queen bee syndrome structure subdimension was found to be significantly higher in midwifes-nurses compared to other groups, suggesting that midwives and nurses have a higher perception of the structure dimension indicative of their attitude and behaviour towards the character and personal traits of female managers, which is attributable to the long working hours of midwives and nurses, them being exposed to managers to a higher extent, and the occupational group consisting mostly of women. Female managers are recommended to focus on their goals rather than their subordinates and be more willing to support other women. Providing manager training for women in lower and middle positions before they are promoted to a higher position, and giving special leadership training to women working in senior management positions can reduce queen bee effects. Special leadership training should be given to midwives-nurses and married staff.

The other variables, namely marital status and manager preference did not differ in terms of structure subdimension. 25.2% of female healthcare workers reported they would prefer working with female managers, 40.0% with male managers, and 34.8% with both. Furthermore, 41.4% found male managers successful, 26.0% female managers, and 32.6% both. It is thought that this can be attributed to women's negative experiences in the past.

Research should be conducted on women who have broken the glass ceiling and overcome the queen bee syndrome to shed light on other women. It is recommended that a scale be developed to measure the perception of queen bee syndrome, which should be validated cross-culturally and compare the views of male and female workers. In order to explain the concept of queen bee syndrome comprehensively, the concept should be investigated together with variables such as organizational commitment, organizational justice, personality, intention to leave, and culture.

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Editorial

Local Tours In Achieving Competitive Superiority In Medical Tourism: The Case Of Aksaray

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Abstract

Aim: The main purpose of this research is to examine the importance of local tours in order to gain competitive advantage in the medical tourism sector.

Methods: In-depth interview technique, one of the qualitative research methods, was used in the data collection process. The research was carried out on the entire Aksaray province universe and the interviews were held in Aksaray province center. Data were collected in April 2019. Within the scope of the study, interviews were held with Aksaray University officials, Aksaray Training and Research Hospital officials, Aksaray Chamber of Commerce and Industry, Aksaray Provincial

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Tourism Directorate, Aksaray Provincial Health Directorate, representatives of private hospitals throughout the province and travel agencies with a total of 20 participants

Results: 55% of the participants are represented by public institutions and organizations, 40% by private institutions and organizations and 5% by non-governmental organizations. According to the data obtained, it was concluded that Aksaray province has health tourism potential and local tours are an attractive option in medical tourism. Aksaray's tourism potential is supported by its historical and cultural elements. However, the lack of development of medical tourism is due to reasons such as lack of projects, unconsciousness, lack of investment and funding. Aksaray has the equipment that can provide competitive power in the field of medical tourism and is suitable for development.

Conclusion: Aksaray's tourism potential needs to be integrated with health tourism, coordination among stakeholders and a strategic plan should be created. It is obvious that Aksaray will develop more economically and socially if it fully utilizes its potential in the field of medical tourism.

Keywords: Medical Tourism, Local Tours, Competitive Advantage, Tourism Potential

INTRODUCTION

Tourism in Turkey has made significant progress in terms of accommodation capacity, the number of tourists coming to the country and tourism revenues since 1980. Today, mass tourism, coastal tourism called sea-sand-sun, has become commonplace and lost its former importance and brought negative results as well as positive economic contributions to the country. The concretization of the beaches and the pollution of air and sea water in cities with coasts are the main negative consequences. For this reason, many countries in the world tend to turn to alternative tourism in addition to coastal tourism (Karamustafa et al. 2009).

Alternative tourism consists of alternative tourism branches that emerged as opposed to coastal tourism. Health tourism, which is a branch of alternative tourism, has gained importance in recent years and has become an important source of income. While the average income of foreign tourists coming to our country in mass tourism is 750-800 dollars, the average income of tourists coming for health tourism is 8500 dollars (SATURK 2016). This difference shows that there is a serious potential for the country to increase tourism revenues in health tourism.

Health tourism can be defined as traveling from the place of residence to another place for the purpose of health, protection and improvement of health and treatment of diseases and staying at the destination for at least 24 hours and benefiting from health and tourism opportunities. The

person traveling for the stated purposes is also called a “health tourist” (Karsavuran et al. 2013: 17-18). Health tourism activities are basically gathered under four dimensions as medical tourism (medical tourism), thermal tourism, elderly tourism and disabled tourism (Karamustafa, 2016:1).

Among the reasons for patients to go abroad in health tourism are low cost, quality, lack of services in their own country, their absence or prohibition, geographical proximity or cultural connections. It has been reported that geographical proximity, service quality and low cost are among the reasons why medical tourists prefer our country (Binler, 2015). Therefore, one of the biggest factors underlying the development of medical tourism is the price differences between countries and the provision of better quality health services at a cheaper price.

Medical Tourism

The unplanned and uncontrolled growth of mass tourism has created some negativities such as the deterioration of ecological balance, intense concretion and pollution in tourism destinations. For this reason, it has been stated that the reasons such as reducing these negative effects of mass tourism, spreading tourism over 12 months and increasing the income obtained from tourism cause the emergence of alternative tourism types (Unur et al. 2012). Medical tourism is travel to other countries for treatment purposes. Although the primary purpose is "treatment", patients also benefit from the services provided by the tourism sector such as accommodation, food and beverage, transportation and travel programs (Tengelimoğlu, 2013). In medical tourism, which includes many types of treatment within the fields of oncology, in vitro fertilization, cardiovascular surgery, organ transplants, aesthetic operations, dental, eye, urology and similar fields, people want to save on treatment costs, not to wait in line to get health care, and to avoid some illegal medical services . they receive treatment outside their own country for reasons such as having procedures (abortion, gender reassignment, euthanasia, etc.) (Yavuz, 2011).

International patients are defined as people who request international health services to solve any health problem or to become healthier. International patients can be evaluated in three groups: medical tourist, tourist health and health for refugees. The main difference between medical tourist and tourist health is that the first is the main purpose of travel, and the second is other activities such as entertainment or business (Tontuş and Nebioğlu 2018). While the main reason for travel in medical tourism is to benefit from health services, when it comes to tourist health, it is stated that the health services they receive in tourism destinations depending on the

health problems that may occur during their travels due to other motivations (Karamustafa, 2016). Especially, people who have to endure long waiting times for treatment or operation, as well as high treatment expenditures in their own countries, are increasingly participating in these travels (İçöz, 2009).

Eric Cohen has made a different classification in terms of the classification of demand in the medical tourism market. According to Cohen, tourists are divided into five basic classes in medical tourism (İçöz, 2009:2261):

Only tourists are those who do not benefit from any health services in the country they visit.

Tourist treated on vacation are tourists who receive health care or treatment as a result of any accident or illness during their travel.

Tourists for vacation and treatment purposes are those who do not go to the region they visit for medical treatment, but receive health care if there is a possibility of treatment for some of their ailments.

Vacation patients are mainly tourists who go to the region they visit to receive health care and treatment. They do it on vacation in the region where they go after recovery or after treatment.

Only the patients are the tourists who stated that they went to the region where the tourists in this group went only for the purpose of getting treatment and health services, and they did not have the purpose of taking a vacation.

When we look at Eric Cohen's classification, it is seen that local tours in medical tourism fall into the category of patients on vacation. Because it is thought that offering health services as an enriched product to the tourist whose purpose is to receive health care will both increase the interest of the tourist and increase the competitiveness of the health institution in the market.

Its infrastructure facilities, accredited health institutions, quality health services, specialist doctors, advanced technology and plastic and aesthetic surgery, hair transplant, eye surgeries, in vitro fertilization, open heart surgery, skin diseases, checkup, cancer treatments, otolaryngology, dialysis The fact that almost all kinds of treatment such as cardiovascular surgery, gynecology, neurosurgery, orthopedics, dentistry, spa, physical therapy and rehabilitation are offered in our

country with reasonable and competitive price advantages shows that Turkey has a greater share in medical tourism day by day . , 2009: 2271).

While Turkey hosted 169 thousand 462 patients in 2012 within the scope of medical tourism, it is seen that the estimated income of these patients approached 2 billion dollars in total in the public and private sectors. In the 10th Development Plan prepared by the Turkish Ministry of Development, it has been estimated that 750 thousand medical tourists will come to Turkey in 2018 and will leave an income of 5.6 billion dollars (Ministry of Health Turkey Medical Tourism Evaluation Report, 2013: 78).

According to the data of the Turkish Statistical Institute (TUIK), the number of visitors coming to our country for health purposes in 2015 was 260 thousand 339 people (Dinçer, Çifçi and Karayılan, 2016:41). According to the analysis carried out by the Agency Interpress based on the data recorded by the Health Tourism Council of Turkey, the number of foreign tourists who came to our country for health purposes in the 11-month period of 2017 (January-November) was 751,000.

Local Tours in Medical Tourism

In accommodation businesses operating in the tourism sector, *the core product (main benefit)* expresses the general function of the service provided and is the reason for the existence of the business. The main benefit of the product provided by the accommodation establishments may be only the accommodation service, or it may also include elements that can create consumer benefits such as entertainment, rest and nutrition, depending on the characteristics of the establishment. *The tangible product (facilitating services)* is very important in the fulfillment of the activities of the accommodation establishments. In the absence of facilitating services, the main benefit may not usually be achieved. For example, the absence of a reception or food and beverage services can eliminate the competitiveness of the business. Within the scope *of enriched products (supporting services),* they are elements that are not always necessary to provide services for the main benefit, but increase competitiveness. It is usually done to differentiate the product (Karamustafa et al. 2010:16).

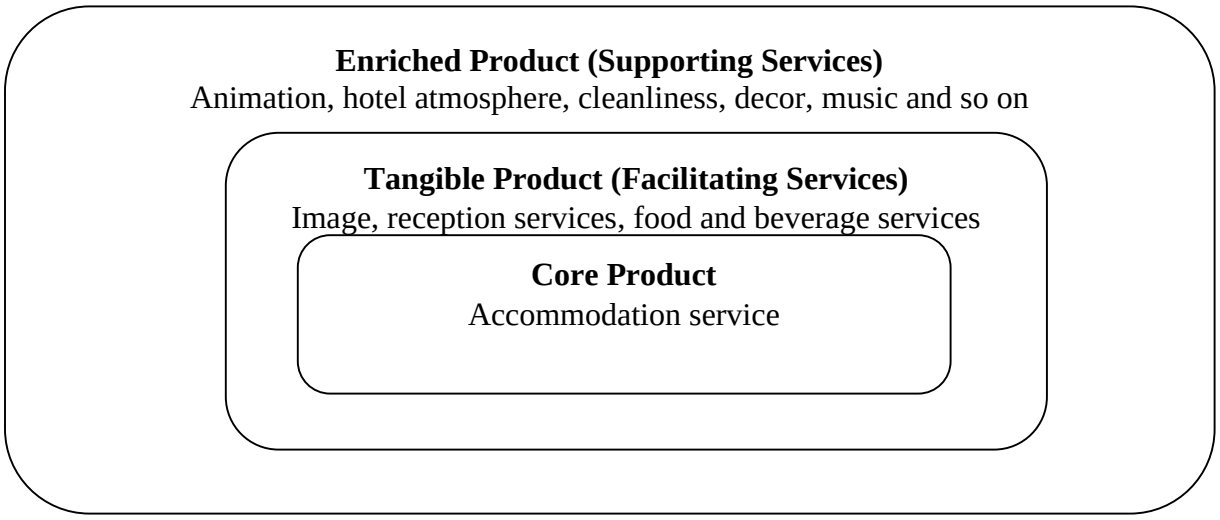

Figure 1. Product Types in Hospitality Businesses

Reference: İslamoğlu, Candan, Hacıefendioğlu and Aydın (2006:18).

Within the scope of the conceptual framework given above, the service that provides the main benefit to the consumer, which is essential in medical tourism, is the health service. In addition to the health service provided in the health institution, services such as accommodation, food and beverage services are considered as facilitating services, while local tours of the region from which they receive health services can be offered to the consumer as a supportive service. It is thought that local tours will increase the competitive power in the field of medical tourism.

An important development in this regard is the plan to offer a 5-day tour service during the treatment with tour packages to be arranged for medical tourists from the USA and European countries, thanks to a project carried out jointly by a private eye center in Kayseri with an agency. It is planned to provide services such as Cappadocia trips, skiing and cultural trips in the services included in these tours (İçöz, 2009:2272). This is an indication of how local tours will be integrated into medical tourism.

Local tours are package tours that offer medical tourists local culture, natural beauties, traditional tastes and other touristic experiences. Such tours enrich the medical tourism experience and provide tourists with an unforgettable holiday experience. Local tours enable medical tourists

to explore the region and become familiar with the local culture and lifestyle outside of the treatment process. This allows tourists to prefer the destination more and make return visits.

The role of local tours in creating competitive advantage in medical tourism is multifaceted. Firstly, local tours increase the attractiveness of the destination by offering tourists the cultural and touristic values of the region as well as health services. The fact that tourists benefit from touristic activities at the same time while receiving health services enables them to experience different experiences offered by the destination.

Secondly, local tours show that medical tourists tend to extend their vacation periods. A medical tourist's participation in local tours to explore the region after receiving health care extends the duration of his stay and thus contributes to the regional economy. This can increase employment opportunities while stimulating the growth of local businesses and the tourism sector.

Finally, local tours are an effective tool for the promotion and marketing of a medical tourism destination. Local tours that offer touristic experiences differentiate the medical tourism destination from other destinations and offer a unique experience to the target audience. This is an important factor in promoting the destination and gaining competitive advantage.

1. RESEARCH METHODOLOGY

The main purpose of the study is to examine the importance of local tours in order to gain competitive advantage in the medical tourism sector. The sub-purpose of the study is to evaluate the suitability and sustainability of Aksaray province for medical tourism. For these purposes, the hypotheses of the study are "Local tours have competitive power in medical tourism." and "Aksaray province is adequately equipped as a medical tourism destination." determined as. During the study, in-depth interview technique, one of the qualitative research methods, was used in data collection.

In-depth interview technique is one of the most common methods used in qualitative research techniques. This method can be done individually or in groups. In this study, the one-to-one interview technique conducted between the researcher and the participant was used. With this method, the researcher can learn the participant's ideas about a subject down to the last detail. In the study, the number of participant samples can be determined in a very small number compared to other techniques in obtaining data (Craig & Douglas, 2005).

In the in-depth interview technique, the researcher must have a good level of communication and listening skills in order to collect data well. Communication ability is related to the researcher's direct and clear communication of questions to the participant. Listening ability is related to hearing, recording and understanding the answers given by the participant correctly. The researcher, who cannot manage the interview process well, cannot reach quality and potential data. For this reason, communication and listening skills are of great importance in research conducted with the interview method (Hair, Bush, & Ortinau, 2002).

The universe for the research was determined as the whole Aksaray province and the interviews were held in Aksaray city center. Data were collected in April 2019. In this context, interviews were held with Aksaray University officials, Aksaray Training and Research Hospital officials, Aksaray Chamber of Commerce and Industry, Aksaray Provincial Tourism Directorate, Aksaray Provincial Health Directorate, Private Hospital representatives and travel agencies throughout the province. In the study, a total of 20 participants were interviewed. The interviews lasted approximately forty-five minutes. 2 of the participants were Aksaray University officials, 5 Aksaray Training and Research Hospital officials, 1 Aksaray Chamber of Commerce and Industry official, 1 Aksaray Tourism Provincial Directorate official, 3 Aksaray Provincial Health Directorate officials, 5 Private Hospital officials and 3 of them are travel agency officials.

55% of the participants are from public institutions and organizations, 40% are from private institutions and organizations, and 5% are from non-governmental organizations.

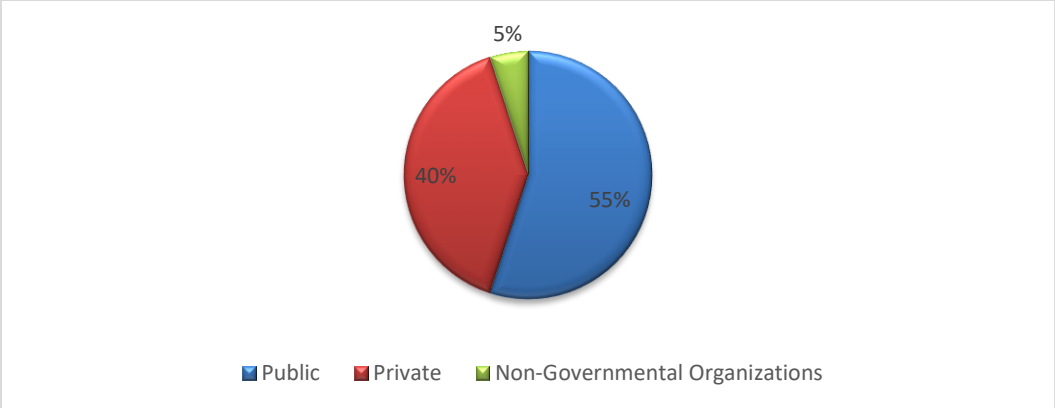

Figure 2. Distribution of Participants.

The interviewed participants were asked, "What are the activities that can be done within the scope of local tours in the province of Aksaray? Does the province of Aksaray have sufficient infrastructure as a destination in terms of medical tourism? Can local tours be given to health tourists as a package with the health services provided in medical tourism? Do local tours increase the competitiveness of medical tourism? "Do you host medical tourists in your hospital? Is Aksaray a center of attraction for medical tourists? If not, what can be done to become one?" The questions that will draw the framework of the study were prepared in advance, and detailed questions were asked during the interview, depending on the situation, and the subject was tried to be examined in depth.

2. ANALYSIS

In this section, the findings obtained from the answers given by the participants to the questions created for the purpose of the study with the in-depth interview technique are summarized.

Theme: Competitive Advantage in Medical Tourism: The Role of Local Tours

Sub-Theme 1: Medical Tourism and Destination Selection

• Factors affecting the destination selection of medical tourists.

• The role of local tours in creating attraction for medical tourists.

Sub-Theme 2: Enriching the Medical Tourism Experience of Local Tours

• Presentation of local culture, natural beauties and traditional tastes.

• Integration of touristic experiences with medical tourism.

Sub-Theme 3: Competitive Advantage in Medical Tourism and the Effect of Local Tour Packages

• The effect of local tour packages on the preferences of medical tourists.

• Increasing the competitiveness of medical tourism destinations by local tours.

Sub-Theme 4: Aksaray Province and Medical Tourism Potential

• Tourism potential and health services capacity of Aksaray Province.

• The potential of regional tours to gain competitive advantage in Aksaray's medical tourism.

Sub-Theme 5: Obstacles and Suggestions for Solutions

• Factors hindering the development of medical tourism.

• How can local tours be used to gain competitive advantage in medical tourism?

First of all, during the meeting with Aksaray Training and Research Hospital and private hospital officials throughout the province, "Do you host medical tourists in your hospital? What is the

general profile of these tourists?" An answer was sought to the question, and in the answers given, it was said that no tourists came within the scope of medical tourism. It has been stated that health services are provided to health institutions providing health services in Aksaray province , mostly to foreign patients of Middle Eastern origin, such as Iraq, Iran, Afghanistan, Syria, Saudi Arabia, who have a residence permit or do not have a residence permit. It has been stated that patients of Far East origin such as China and Japan are provided with health services within the scope of tourist health, but it is underlined that this process is not within the scope of medical tourism. In addition, it has been said that a great deal of health care is provided to expatriate patients of Turkish origin, who come from European countries such as Austria, the Netherlands, England and Belgium, the majority of whom live in Germany, especially during the summer months. When these situations are evaluated together, it is understood that the health service activities in question are not evaluated within the scope of health tourism.

The question "Can Aksaray province be a center of attraction in terms of health tourism? What can be done to become one?" was asked that Aksaray could be very comfortable as a health tourism centre. It has been stated that general surgery operations such as surgeries, advanced metabolic surgery, obesity surgery, and plastic surgery can now be performed easily, and there are both technological equipment and professional human resources in this regard.In fact, health care in branches that require advanced expertise such as open heart surgery in neighboring provinces such as Nevşehir and Niğde. It was stated that the province of Aksaray should start its medical tourism activities as soon as possible. It was also stated that a project was submitted to the Ministry of Health in this context. Again, in order for Aksaray to be a center of attraction in terms of medical tourism, there is a need for specialization in other specific branches. It has been stated that these specialization branches will attract many health tourists if they are advertised and promoted well.

On the other hand, the Ministry of Health has taken this issue seriously for the last ten years and a department has been established within this scope, that the political authorities in Aksaray should step into this area and raise awareness on this issue, both non-governmental organizations and public institutions, media or social media. Announcing health tourism through channels, the private sector's involvement in the subject, the creation of projects and their presentation to the Ministry of Health, and cooperation as a team with travel agencies that will market it well are expressed as activities that will enable Aksaray to become a center of attraction in health tourism.

" What are your ideas about the activities that can be done within the scope of the local tour in Aksaray?" The first answer to the question is Ihlara Valley, which is a very convenient canyon for trekking, and visiting the frescoed churches in the valley, showing places such as Saratlı underground cities, which are quite abundant in the region, showing natural and historical places in Güzelyurt Gelve, Hasandağı Nora Antique City, Hasandağı Winter Sports tourism center, Sarıyahşi Hirfanlı tourism center and boat tours, Hasandağı paragliding activities, Sultanhanı inn and caravanserais, the city's natural beauties, cultural or historical places such as Salt Lake are the services that can be provided to the health tourist individually or as a package tour within the scope of local tours. has been done.

"Can the health services provided in medical tourism and local tours be given to health tourists as a package?" It was stated that the activities stated in the previous question, question 3, can be given to the health tourist easily. Within the scope of health tourism, health tourists who come for surgical interventions such as hair transplantation, dental implants, eye surgeries can be shown the cultural and historical places of the city and their natural beauties can be shown. On the one hand, while improving his health, on the other hand, he can take a vacation to relieve his stress and fatigue. It has been stated that the facilities provided in this regard are in the position of a 5-star hotel and the cost of the service provided is important.

"Do local tours increase competitiveness in medical tourism?" In response to the question, all participants stated that they would definitely increase it. In particular, due to the natural beauties and historical places of Aksaray province, registration, transfer, bringing to the accommodation facility, promotion of the city in the presence of multilingual guides, getting health services and returning to their country in a healthy way are a situation that is desired to be within the scope of medical tourism. Participants stated that Aksaray is a city that pleases people who come to their senses, that it should be promoted properly, that it has a lot of natural beauties, that it is a city that satisfies people in terms of Seljuk artifacts, caravanserais, Salt Lake tours, paragliding, history, culture and nature. Expressing that it is a sustainable tourism activity, they specifically stated that all these activities will increase the competitiveness of medical tourism among peer hospitals and surrounding provinces.

Table 1. Distribution of the Number of Tourists Visiting the Cappadocia Region by Years

2013	2014	2015	2016	2017
2.689.949	2.851.543	2.608.073	1.493.493	2.206.372
2018	**2019**	**2020**	**2021**	**2022**
2.949.542	3.834.134	962.124	2.285.895	3.970.909

Reference: Ministry of Culture and Tourism (2023)

The number of tourists visiting the Cappadocia Region shown in Table 1 is substantial and it is stated that approximately 4 million tourists visited the Cappadocia Region in 2022. Considering the integration of this number with medical tourism, it is estimated that tourism revenues from medical tourism will be quite high.

"Does Aksaray province have sufficient infrastructure as a destination in terms of medical tourism?" 5 of the participants answered no to the question, while 15 of them answered yes. This situation is visualized in Figure 3. Participants stated that the potential is quite high, however, the lack of qualified and quality facilities as a lack of infrastructure, lack of projects, lack of sufficient awareness, and lack of investment hinder the feasibility of medical tourism in Aksaray.

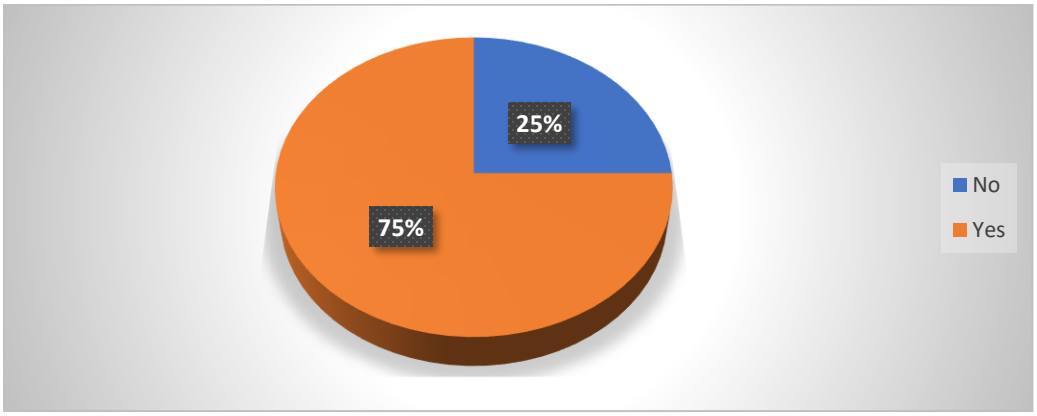

Figure 3. Whether Aksaray Province Has Sufficient Infrastructure in terms of Medical Tourism Destination

Finally, the reasons for the lack of development of medical tourism in Aksaray and the problems encountered were asked. Participants primarily stated that medical tourism could not be realized due to the lack of funds and the absence of projects. In addition to these, political authorities do not have enough information about the subject, lack of awareness, lack of qualified facilities in terms of eating, drinking and entertainment, lack of sufficient investments, lack of transportation, promotion, domestic and foreign marketing activities, health service providers and travel agencies

or reasons such as lack of coordination among its stakeholders are stated as obstacles in front of medical tourism activities in Aksaray.

3. CONCLUSION AND RECOMMENDATIONS

The tourism sector is among the sectors where Turkey can gain a competitive advantage by using its tourism potential. Its tourism potential and advantages indicate that Turkey will come to better positions in terms of tourism in the future (Gökdayı and Polat 2015). In addition to coastal tourism, Turkey is also very rich in terms of the feasibility of many alternative tourism types. In this context, the tourism potential of each province and each region in Turkey is different. In this study, basically, "Local tours have competitive power in medical tourism." and "Aksaray province is adequately equipped as a medical tourism destination." hypotheses were tested. In addition, the tourism potential of Aksaray province was tried to be revealed and the following results were obtained:

It has been stated before that this issue, which has a great contribution to the country's economy together with its sub-branches, is now considered important by its stakeholders. It has been understood from the interviews and the data obtained that Aksaray should get a share of this cake. For this reason, health service providers in Aksaray should act as soon as possible for health tourism activities. Because Aksaray is one of the most touristic destinations of the Cappadocia Region with its historical and cultural elements and natural beauties.

It has been stated that if medical tourists start to come to Aksaray, if this service is provided together with local tours, every tourist who comes to Aksaray will definitely leave satisfied. In this respect , it has been understood from the data obtained that Aksaray has the potential to provide competitive advantage in health tourism activities , develop a sustainable health tourism activity and become the market leader of the region. For this reason, it is of great importance for the economy of Aksaray and the country's economy that the necessary investments are made, the necessary projects are developed, all political and administrative authorities take the issue into consideration, and that both the public and private sectors take this business seriously.

From the data obtained for the reasons explained above, "Local tours have competitive power in medical tourism." hypothesis was accepted. Because, when the health service to be provided within the scope of medical tourism is presented to the health tourist as an enriched

product (supportive service) together with local tour packages, it has been concluded that it will both increase its attractiveness and increase the demand.

Another hypothesis of the study, "Aksaray province is adequately equipped as a medical tourism destination." hypothesis was accepted. From the data obtained, it has been concluded that there have been important developments in the field of health services in the province of Aksaray in recent years, that medical tourism can be done, that there is a newly opened public health facility in the comfort of a five-star hotel, and that there are private health facilities that can compete in the national market. For this reason, it has been understood that Aksaray has sufficient equipment as a medical tourism destination, especially in the fields of heart surgery, obesity and metabolic surgery, and aesthetic surgery.

According to the data obtained from the interviews, the reasons for the lack of development of medical tourism in Aksaray are primarily listed as lack of projects, lack of awareness and awareness, lack of investment and funding, lack of accommodation and hotel services at the required level, lack of promotion and advertising activities, transportation problems . These reasons are shown in Figure 4.

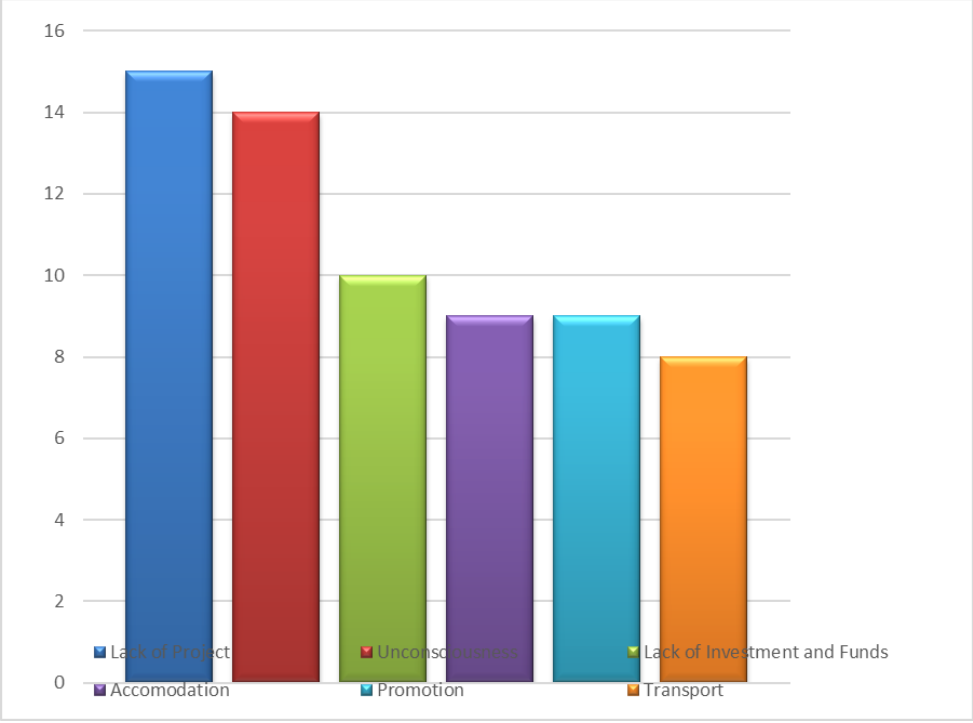

Figure 4. Reasons for the Non-Development of Medical Tourism in Aksaray Province

Figure 5 shows Aksaray's natural beauties, historical structures, tourism opportunities that will provide competitive power, and tourism opportunities that can be given as a package in medical tourism.

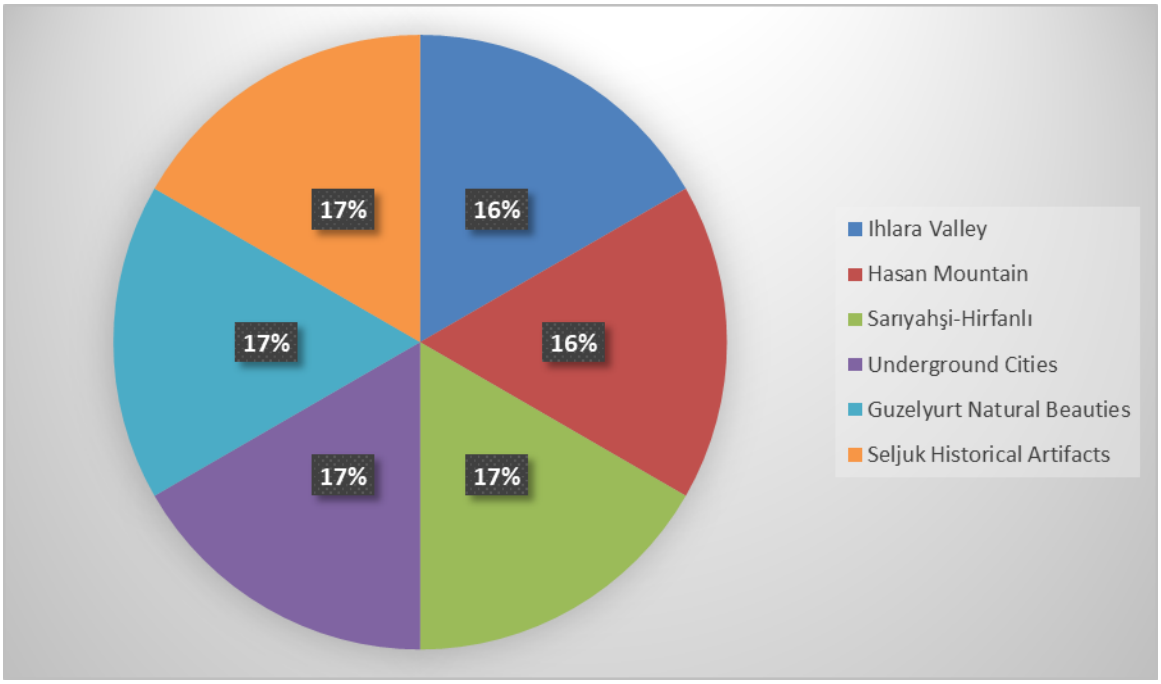

Figure 5. Tourism Opportunities of Aksaray Province

As a result of the interviews made as the suggestions of the study, this potential of Aksaray, which is very rich in terms of both historical monuments and natural beauties, should be integrated with health tourism, and this situation should be turned into an opportunity by making use of these features that currently attract tourists in the field of health tourism. Therefore, all stakeholders have a responsibility here. The common emphasis of the interviewed participants is that the potential of Aksaray has not been fully evaluated and realized. It is estimated that the region and Aksaray will develop both economically and socially as soon as the potential is realized. For this reason, it is necessary for every sector to take up this issue and take advantage of this potential.

In this context, it is necessary to create a detailed strategic plan by removing the identified obstacles to the feasibility of medical tourism in Aksaray as soon as possible. As stakeholders, the necessary awareness and awareness should be created by ensuring coordination between health service providers, public administrations, political authorities, municipalities and culture-tourism

institutions, travel agencies, and Aksaray province should get its share from the medical tourism cake.

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Editorial

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Exploring Current Issues in Health Management: A Bibliometric Analysis

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Abstract

Aim: This research provides a complete bibliometric analysis with the goal of exploring and comprehending current health management literature.

Methods: We delve into the current research literature using bibliometric analysis to discover to detect new trends and knowledge gaps. This analysis is an important resource for healthcare practitioners and researchers because it indicates the path to improve health management

Results: The findings of this study contribute to evidence-based decision-making and future research activities focused at addressing the important challenges for healthcare systems.

Conclusion Researchers have offered vital insights into the issues and opportunities confronting health management today, ranging from healthcare financing and economics to technology adoption, patient-centered care, and successful leadership

Keywords: Bibliometric Analysis, Health Management, Healthcare

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INTRODUCTION

Health management is critical in determining the quality, accessibility, and sustainability of healthcare systems. As societies continue to face complex and expanding healthcare challenges, it is becoming increasingly necessary to identify contemporary issues affecting health management (Robins & Davidhizar, 2020). In this respect, bibliometric analysis is useful to analyze and evaluate the research literature, indicating current trends, intellectual structure, and knowledge gaps.

Understanding current health management literature concerns is critical for healthcare policymakers, administrators, practitioners, and researchers in order to offer effective solutions, and handle the challenges that healthcare systems confront. We can acquire useful insights into current challenges, emerging trends, and viable solutions that can promote positive change in healthcare organization management. There may also a kind of researches provide seconder benefits for Health managers and stakeholders by examining the current interest of the scholars. Furthermore, this study may guide the future research by identifying research gaps and areas that require further investigation. By highlighting the current state of knowledge and areas of interest, researchers can strategically direct their efforts on addressing critical challenges and advancing the field of health management.

This bibliometric analysis is intended to be a useful resource for healthcare practitioners, policymakers, researchers, and other stakeholders interested in health management. This study will contribute to the existing knowledge base, enhance evidence-based decision-making, and direct future research endeavors in tackling the significant challenges facing health management today by identifying key concerns and trends.

The methodology used for the bibliometric analysis will be presented in the following sections, as will the important findings and insights generated from the study, as well as the implications for healthcare practice, policy, and research. We hope to build a greater awareness of the profession and support the advancement of effective ways to improve healthcare delivery and outcomes for individuals and populations through this comprehensive assessment of contemporary topics in health management. The purpose of this research is to do a complete bibliometric analysis focused on contemporary concerns in health management. This analysis will provide a comprehensive view of the major topics, research themes, and prominent contributors driving the health management environment.

1. THEORETICAL FRAMEWORK

Health management is a multidisciplinary field that guides its ideas, methods, and research with many theoretical frameworks. These theoretical viewpoints serve as a foundation for comprehending the intricacies of healthcare organizations, the dynamics of healthcare delivery, and the obstacles that must be overcome in managing and enhancing healthcare systems. Currently, this field has a few primary themes and regions (Linden, 2011; Hunter & Brown, 2007; Shelmerdine & Williams, 2003). Healthcare funding is one of the major concern. Several studies have emphasized rising healthcare prices and care delivery, and the difficulties in reconciling cost-effectiveness with quality of care (Robinson, 2002; Welfens, 2020).

Healthcare Technology and Innovation might be treated as a second subtheme (Agbo et al., 2019). Researchers have explored the opportunities and threats of technological adoption, as well as the ethical and legal implications of data privacy and security (Qadri et al., 2020; Budd et al., 2020). Advances in healthcare technology have changed treatment delivery, but they also create new issues for health management. Adoption and integration of electronic health records, telemedicine, and artificial intelligence (AI) technologies necessitate strategic planning (Kraus et al., 2021). Patient-Centered Care and Engagement can be evaluated as the third critical theme. The literature has focused on strategies for increasing patient involvement, communication between patients and healthcare practitioners, and patient satisfaction and outcomes (Larson et al.,2019). In recent years, patient-centered care has gotten a lot of attention, with an emphasis on empowering patients and incorporating them in shared decision-making processes (Eklund, 2019). This theme has received an attention with an emphasis on patient empowerment. Strategies for increasing patient involvement and communication among various stakeholders. In addition, research has been performed to determine the importance of patient feedback and experience in leading quality improvement efforts.

Healthcare leadership is considered as the fourth theme (Figueroa et al., 2019). For health-care systems to succeed, effective leadership is crucial. The characteristics of successful healthcare leaders, the necessity of building a culture of creativity and collaboration, and the obstacles that managers face in complex healthcare organizations have all been explored (Chen and Dekary, 2020). The features of successful healthcare leaders, the necessity of facilitating a culture of

creativity and collaboration have been researched. Furthermore, research has been conducted on the impact of leadership development programs on organizational performance and employee happiness.

2. RESEARCH METHODOLOGY

Bibliometric analysis is a quantitative research technique that involves statistically analyzing bibliographic data from scholarly publications. It seeks to investigate and quantify numerous elements of scientific literature, including publication patterns, citation networks, authorship trends, and keyword distributions. Researchers can acquire insights into the intellectual structure of a topic, identify key publications, map research trends, and measure the impact and visibility of research outputs by examining these bibliographic data.

In this context, the main research questions of the study to be carried out are presented below:

• Who are the key authors working on health management as a field of study?

• Which academic journals publish research working on health management?

• Who are the most frequently cited authors?

• Which academic journals are frequently cited by authors studying health care management?

Data Selection and Collection

First, many databases were examined for data retrieval in the study. Web of Science was chosen for this investigation. First, the database was searched using the relevant article entitled "health management". Then, only SSCI, SCI-Expanded and ESCI categories are selected. 18 articles are included.

1156 arresults. Among these in order to focus on further details of the field, first three categories of Web of Science in this particular field are selected. Namely, Public Environmental Occupation Health, Health Care Science Services, Health Policy Services, Multidisiplinary services, Nursing, Social Sciences Interdisiplinary, Business, Management. Finally 420 articles are included.

Data from evaluation studies, book reviews and editorials, articles, book chapters, and proceedings are excluded. For the bibliometric analysis of the data, the biblioshiny program R (3.6.1) was utilized.

Sample and characteristics

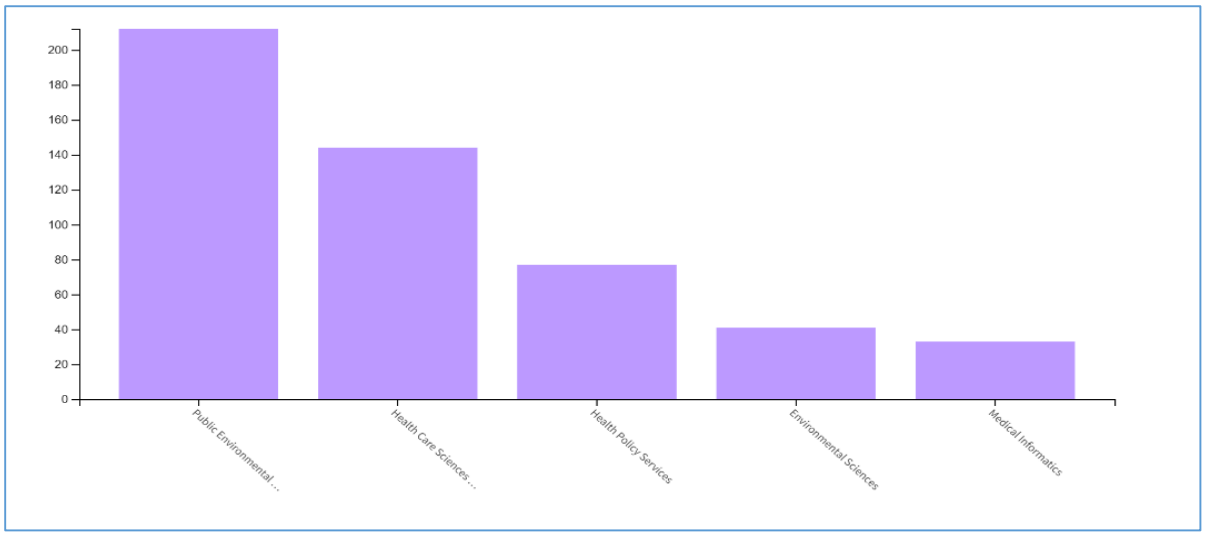


Figure 1: Web of science Top 5 categories

Table 1: Main information of data

Description	Results	Description	Results
Timespan	1983:2023	Keywords Plus (ID)	845
Sources (Journals, Books, etc)	167	Author's Keywords (DE)	1145
Documents	420	Authors	1898
Annual Growth Rate %	7,64	Authors of single-authored docs	39
Document Average Age	7,59	Single-authored docs	43
Average citations per doc	9,679	Co-Authors per Doc	5,86
References	12722	International co-authorships %	17,14

3. ANALYSIS

Bibliometric Analysis-Descriptive Analysis

Annual Scientific Production

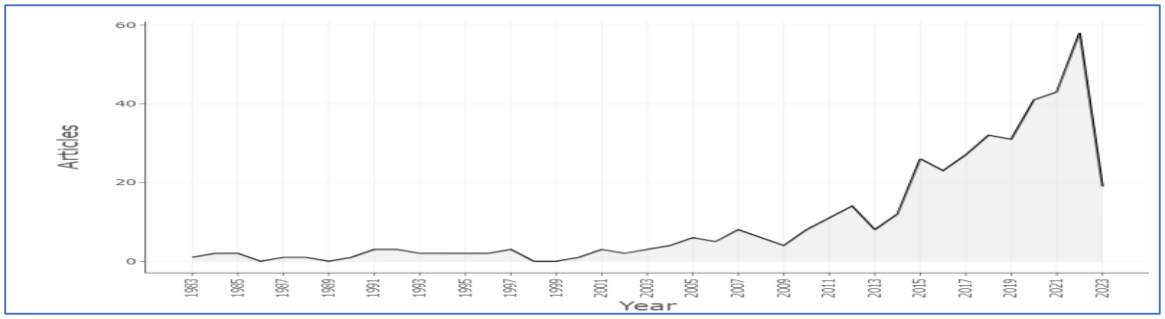


Figure 2: Annual Scientific Production

When the figure 2 is examined annual scientific production can be evaluated. Accordingly, the studies started to emerge around the beginning of 1980s, however until 2000s there is not any significant interest from the scholars. By the mid of 2000s and especially during Covid-19 period, scholars have started to show attention.

Sources

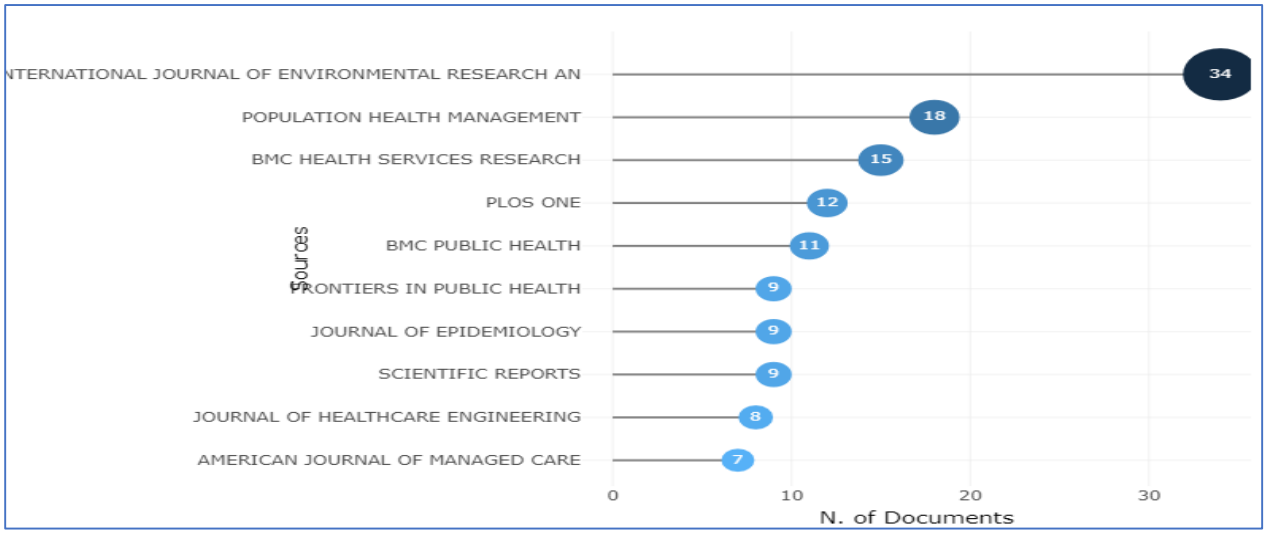


Figure 3: Most relevant sources in the selected categories

Local cited references

Table 2 represents the most cited sources as references in the data set. That shows the frequently used sources to publish in the above-mentioned web of science categories in health management and other related areas.

Table 2: Most Local cited references

Sources	Articles
Plos One	174
Health Affair	129
Lancet	124
Journal of Medical Internet Research	116
JAMA-J Am Med Assoc	107
BMC Health Services Research	106
Social Science & Medicine Journal	103
Health Policy Planning	96
Journal of Epidemology	96
New England Journal of Medicine	96

Most relevant authors

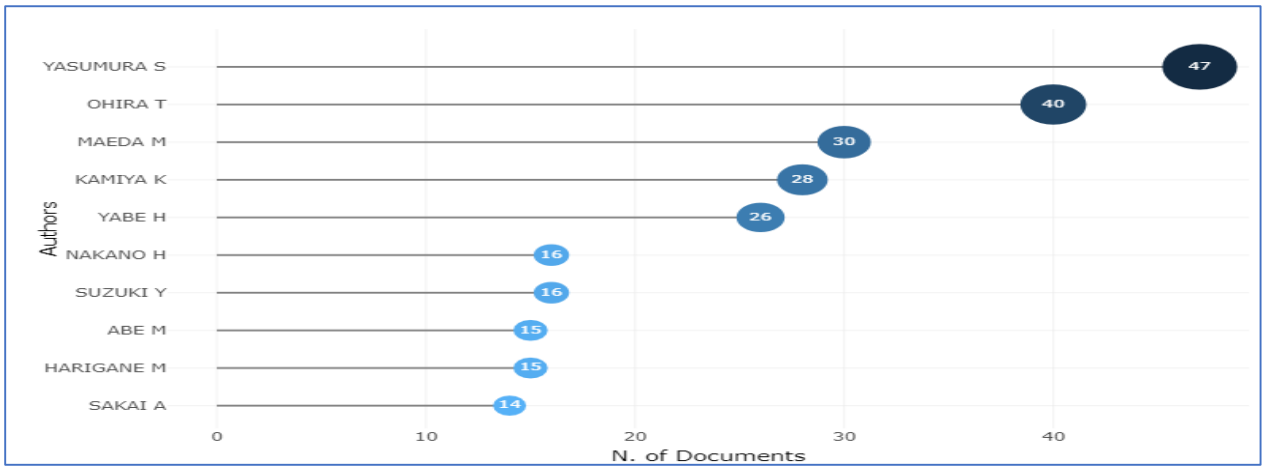


Figure 4: Most relevant authors

When the articles and authors explored, Yasumura appears as the most relevant of the selected field. Chira, Maeda, Kamiya and Yabe follows this author. To provide a further detailed information and discussion, it is better to examine the authors' production over time (figure 5)

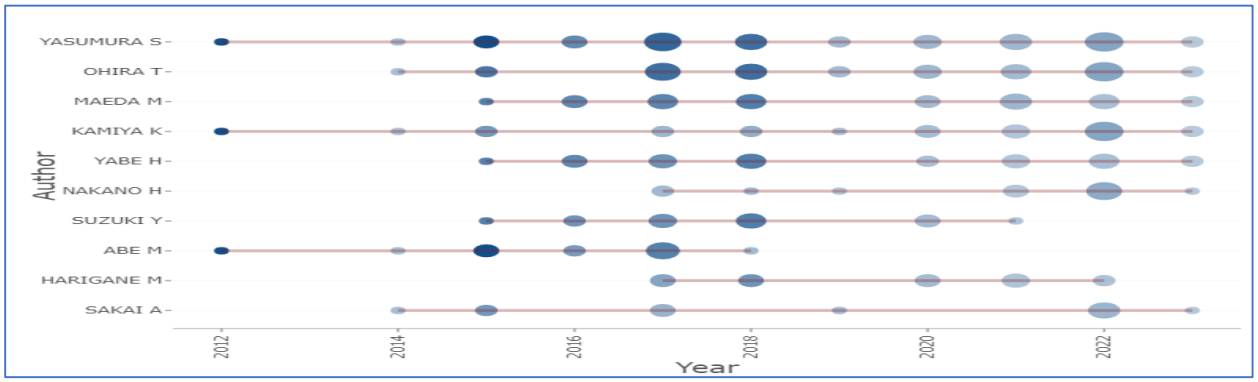


Figure 5: Authors' production over time

Figure 5 illustrates the chronological representation of the authors' publication performances. Among the authors, Yasumura and Kamiya stand out as having the longest publication track records between the years 2012 and 2022. To provide additional information, the figure uses large round shapes along the lines to represent the amount of publications made by each author in a given year. These larger circles act as visual markers, emphasizing the authors' productivity over time. Additionally, the figure incorporates small dark circles along the lines, which represent annual citations of the authors' studies. These smaller circles indicate the instances where other researchers have referenced the work of the respective authors in their own publications. Overall,

Figure 5 effectively visualizes the authors' publication performance, with the larger round shapes representing publication counts and the smaller dark circles denoting annual citations.

Country Scientific Production

Table 3 shows the scientific production distribution among the countries. Accordingly Japan is the leading country. USA and China follow in terms of the number of published articles.

Table 3. Scientific production

region	Freq
Japan	419
USA	353
China	129
UK	81
Australia	79
Brazil	73
Germany	52
South Korea	52
Netherlands	31
Italy	24

Documents

Table 4: Highly Cited Documents of the field

	Paper	Total Citations	TC per Year	Normalized TC
1	Yasumura, S.,et al. (2012). Study protocol for the Fukushima health management survey. Journal of epidemiology, 22(5), 375-383.	279	23,25	8,57
2	Suzuki, Y. (2015). Psychological distress and the perception of radiation risks: the Fukushima health management survey. Bulletin of the World Health Organization, 93, 598-605.	126	14	8,58
3	Chaulagai., et al. (2005). Design and implementation of a health management information system in Malawi: issues, innovations and results. Health policy and planning, 20(6), 375-384.	85	4,47	2,87
4	Hung, M. C., & Jen, W. Y. (2012). The adoption of mobile health management services: an empirical study. Journal of medical systems, 36, 1381-1388.	76	6,33	2,33
5	Tanaka, H., et al. (2016). Non-thermal atmospheric pressure plasma activates lactate in Ringer's solution for anti-tumor effects. Scientific reports, 6(1), 1-11.	71	7,89	4,83

6	Graffigna, et al.,. (2014). How to engage type-2 diabetic patients in their own health management: implications for clinical practice. BMC public health, 14, 1-12.	63	6,3	3,5
7	Kunii, et al.,(2016). Severe psychological distress of evacuees in evacuation zone caused by the Fukushima Daiichi Nuclear Power Plant accident: the Fukushima Health Management Survey. PLoS One, 11(7), e0158821.	59	7,38	3,93
8	Slabaugh, S.et al.(2015). Leveraging health-related quality of life in population health management: the case for healthy days. Population health management, 20(1), 13-22.et	58	8,29	4,13
9	Zwetsloot, G. I., & Van Marrewijk, M. N. (2004). From quality to sustainability. Journal of Business Ethics, 79-82.	55	2,75	3,38
10	Krishnan, A., et al. (2010). Evaluation of computerized health management information system for primary health care in rural India. BMC health services research, 10(1), 1-13.	55	3,93	2

Keyword analysis

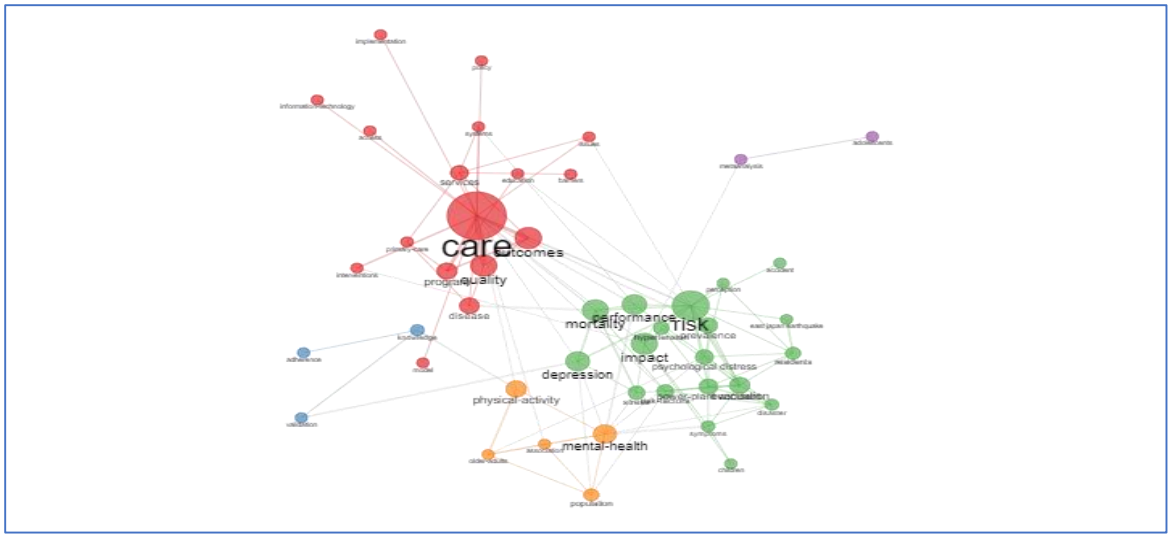
Since the authors usually give the most appropriate terms as keywords in their articles, the analysis of keyword plus can provide additional data that can take the content of the articles one step further and guides the conceptual mapping of the field (See Table 4).

Table 4: Keywords (author keyword and keyword plus)

N	Author keywords	Occurences	Ek Anahtar Sözcük	Sıklık
1	health management	40	care	58
2	Population health management	18	risk	24
4	disaster	12	quality	21
5	public health	12	impact	18
6	Covid-19	11	outcomes	18
7	great east japan earthquake	9	mortality	17
8	nuclear disaster	8	performance	16
9	nursing diagnosis	8	depression	14
10	self-management	8	disease	14

Conceptual background analysis

Conceptual analysis provide us the key themes and the relationships among them. In this research, concept relationships appears in three main clusters as it can be seen in figure 6. Care, risk and mental health are categorized.



4. CONCLUSION AND RECOMMENDATIONS

Healthcare integrated with digital technologies that will cover all healthcare services worldwide paradigm is in the development stage and its development has accelerated. New tools and technologies, all healthcare in the world initiates a digital transformation in systems. This flexible healthcare system eliminates time and location restrictions for this paradigm of continuous health outcomes monitoring and remote immediate intervention, integrated care, self-care and social support. In the near future, this situation it is expected to change the presentation methods. This digital transformation in health systems and fundamental changes contribute greatly to increasing institutional efficiency and improving the quality of patient care will present. Infrastructure tools of the health system aimed at the emergence of new information, communication and medical technologies is seen as. People-centered health quality and accreditation activities in terms of the implementation of this approach can be seen as a tool. Looking at the literature, patient-oriented patient satisfaction of health services and improves service quality, medical errors appears to be reduced. In addition, a people-oriented policy framework on a global scale The World Health Organization's "people orientation" is the competence and considered a fundamental issue for the quality of the health system. Especially in the health sector, which is in the process of intense change in many countries, it can be said that change leaders are among the important strategic resources for institutions. Health care leaders who have successfully implemented the necessary changes by this means; that they can increase the service delivery quality and thus the satisfaction

rates and it can be stated that they can also improve their performance at the same time. This positive contributions of leaders to both the change process and health outcomes considered to be very important for the industry.

The assessment of literature emphasizes significant topics and concerns in current health management research. Researchers have offered vital insights into the issues and opportunities confronting health management today, ranging from healthcare financing and economics to technology adoption, patient-centered care, and successful leadership. Policymakers, healthcare administrators, and academics may design evidence-based strategies and solutions to improve the quality, accessibility, and sustainability of healthcare systems by addressing these concerns. To address the changing nature of health management and stimulate innovation in healthcare delivery, more research and collaboration are required.

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IJHMT Editorial

International Journal Of Health Management And Tourism

Technical Efficiency Of Post-Disaster Health Services Interventions: The 2023 Kahramanmaraş Earthquake In Turkey

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Abstract

Aim: In order to meet the most urgent needs of the regions affected by the biggest earthquake of the century, government, national and international actors have made enormous efforts. However, some international studies evaluating the effectiveness of previous disaster relief efforts have expressed that inefficient use of resources in the disaster relief process should be a matter of concern. The main purpose of this study is to obtain evidence to support post-earthquake healthcare interventions and to establish a reference on earthquake relief.

Methods: The data of the study covers the period from 6 February to 16 February 2023 and was obtained from the official daily reports of the Health Disaster and Coordination Centre Unit (SAKOM) of the Ministry of Health. The data consisted of allocations of rescue units, human resources, workload and other information recorded in official daily reports. In addition, Data

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Envelopment Analysis (DEA) method was used to evaluate the technical efficiency of health services provided in 10 provinces affected by the earthquake in the first emergency period of the Kahramanmaraş-centered earthquake.

Results: The technical efficiency scores of the health services provided in the earthquake-affected provinces are analysed, it is seen that while the average technical efficiency was 52% (SD: 0.30) on the 5th day of the earthquake, it increased significantly to 80% (SD: 0.21) on the 10th day.

Conclusion: This result shows that health services in earthquake zones have started to be provided more efficiently over time. The rapid normalisation of health services in earthquake zones is an important indicator for the performance of disaster management and crisis response teams. Despite the extensive research on earthquake response and health services individually, there's a noticeable gap in literature explicitly exploring the relationship between the two. This lacuna in research is particularly evident when it comes to examining the efficiency of health services during seismic disasters.

Keywords: Public Health, Emergency, Earthquake, Disaster, Sustainability

INTRODUCTION

Considered as one of the most destructive and deadly natural disasters in the world, earthquakes not only cause structural damage, but also have serious and long-term impacts on public health and health systems. The loss of lives of health workers or their inability to work, damage to health facilities as a result of earthquakes can render normal supply chains inaccessible and disrupt the overall functionality of the health system. This widens the gap between the growing health needs of the population and the availability of health services to meet them. Implementing effective health interventions that meet the most urgent health needs in these settings requires accurate assessment of the health status of the affected population and the functionality of the health system to respond to gaps in health services created or exacerbated by the disaster (Nickerson et al., 2015).

On 6 February 2023, Turkey experienced two main earthquakes, the first at 04.17 local time in Pazarcık district of Kahramanmaraş province with a magnitude of 7.7 and a depth of 8.6 km, and the second at 13.24 with a magnitude of 7.6 and a depth of 7 km. The natural event on 6 February 2023 is the world's largest land earthquake with a geographical area of approximately 400 km2 , including the provinces of Kahramanmaraş, Hatay, Adıyaman, Malatya, Osmaniye, Gaziantep, Kilis, Adana, Diyarbakır, Elazığ and Şanlıurfa (Figure 1). According to 2021 population statistics, 13,421,699 people live in the earthquake zone. In general, it is estimated that

9.1 million people were affected by earthquakes, 50 thousand people lost their lives and 115 thousand people were injured. Table 1 shows the data obtained from the cities affected by the earthquake. According to the data of Ministry of Health, 9881 earthquake victims, including 1834 in intensive care unit, are in inpatient treatment in hospitals in Ankara, Istanbul, Adana, Gaziantep and Antalya.

Figure 1 Earthquake Zone

Table 1. Data obtained from the cities affected by the earthquake

	Adana	Şanlıurfa	Gaziantep	Diyarbakır	Hatay	K.Maraş	Malatya	Adıyaman	Osmaniye	Kilis
PGA (g)	0,3	0,1	0,17	0,14	0,45	0,37	0,35	0,37	0,31	0,2
Affected population (n)	2.274.106	2.170.110	2.154.051	1.804.880	1.686.043	1.177.436	812.580	635.169	559.405	147.919
Affected area (km^2)	13.844	19.242	6.803	15.168	5.524	14.520	12.259	7.337	3320	1412
Affected population density ($n/km)^2$	164,3	112,8	316,6	119,0	305,2	81,1	66,3	86,6	168,5	104,8
Number of injured (5.gün)	9045	6151	13325	902	18054	9523	7433	13007	2460	853
Death toll (5.gün)	585	339	3287	300	7060	5556	869	3446	900	91
Number of injured (10.gün)	26389	902	16902	15873	2606	11444	881	16144	8699	9651
Death toll (10.gün)	7603	395	5684	3854	1117	703	92	6903	1391	346

In the first stage of the earthquake, 5527 buildings were destroyed, 145,734 buildings were severely damaged and 34,972 buildings were moderately damaged. Access to the cities was blocked due to asphalt roads being cracked. As all citizens who wanted to provide voluntary support piled up on the roads, access to the cities became much more difficult. With the collapse of buildings, many survivors set off in the opposite direction to leave the city, and on the first day of the earthquake, it became almost impossible to transport the wounded to health institutions outside the city by road. The airport in Hatay city was rendered unusable. 14 public hospitals in the region were mid-level damaged, 13 were high-level damaged, 14 of the private hospitals were mid and high level damaged and a total of 41 hospitals became unusable. Also, Hatay (56%), Kahramanmaraş (50%) and Gaziantep (50%) have most damaged public hospitals percentages. In addition, the same sequence Malatya (86%), Adıyaman (50%) and Hatay (40%) have most damaged percentages private hospitals. The table below shows the percentages of mid and high level damaged and unusable buildings percentages (Table 2). Moreover, Diyarbakır is the most highest damaged primary healthcare services percentage and Adıyaman is most damaged pharmacy rates according to the other provinces. It was not possible for the health personnel working in the usable hospitals to recover in the first days, many health personnel lost their lives in the earthquake, and the surviving health personnel had to struggle with the health or death problems of their families. Therefore, open pharmacies proportion is most critical parameters about the struggling with the effects of the earthquakes and the need for a field hospital has become inevitable for the highly damaged provinces.

Table 2. Distribution of damaged health institutions, pharmacies and field hospitals by province

	Percentage of damaged public hospitals (%)	Percentage of damaged private hospitals (%)	Damaged Primary Health Care Facility %	Percentage of Damaged Pharmacy (%)	Day 10 Proportion of Open Pharmacies (%)	Field hospitals
Adana	6	7	12.3	1	98.7	0
Adıyaman	18	50	14.4	47	36.2	4
Diyarbakır	0	0	15.8	24	97.7	0
Gaziantep	50	0	3.3	5	92.1	3
Hatay	56	40	13	36	33.3	20

K. Maraş	50	29	12.1	44	30.3	13
Kilis	0	0	3.8	0	97.9	0
Malatya	8	86	6.2	18	44.2	1
Osmaniye	14	0	1.5	4	95.2	0
Şanlıurfa	0	0	6	1	97.0	0

Response to earthquakes was coordinated through AFAD (Disaster and Emergency Management Authority). Emergency planning for the largest earthquake of the century was initiated by the ministries of Health, National Defence, Urbanisation and Environment, Internal Affairs, Energy and Natural Resources, National Education, Agriculture and Forestry, Treasury and Finance, Transport and Infrastructure, Trade, Industry and Technology, Family and Social Policies, led by AFAD. In addition to a three-month state of emergency in the 10 most affected provinces, the Government of Turkey declared a level four alert to appeal for international assistance.

AFAD, SB, MSB and OGM is the region where the 2 ships affiliated to MSB first surrounded the naval navy. Thanks to the maritime characteristics of 38 ships, in addition to 78 aircraft and 116 helicopters arriving at working airports, 52,000 patients from the region were transported to other cities in the first day of the earthquake area for all health content.

In the last 1 month, 32,335 people were assigned and 22,161 health personnel were assigned to the region through the SAKOM system, which was launched by the Ministry of Health in 2015, in order to carry out the necessary treatments and services. UMKE and ambulance teams were directed to debris rescue operations. Field hospitals were established in Hatay, Kahramanmaraş, Adıyaman and Malatya. Since it was known that the earthquake victims who were rescued from the rubble mostly needed surgical and therefore anaesthesia, then internal medicine/nephrology, gynaecology and obstetrics, urology, neurosurgery, ophthalmology, plastic and reconstructive surgery, cardiovascular surgery, paediatric surgery, thoracic surgery, intensive care, KVC intensive care and emergency medicine services, planning was made on the first day to meet the needs. In order to provide pharmaceutical support, mobile pharmacies and pharmacies that survived in the region were put on duty on the 2nd day of the earthquake. While medicines were sent to the region by the Turkish Medicines and Medical Devices Agency (TİTCK), the Social Security Institution (SGK) provided medicines and medical supplies to patients with

chronic diseases without a prescription for one time only. All other needs continued to be supplied by land, air and sea. Provinces were categorised according to the regions, the sea, the condition of the airport, the condition of the land roads and logistics were provided.

In order to meet the most urgent needs of the regions affected by the biggest earthquake of the century, government, national and international actors have made enormous efforts. However, some international studies evaluating the effectiveness of previous disaster relief efforts have expressed that inefficient use of resources in the disaster relief process should be a matter of concern (Zhang et al., 2011; Robertson et al., 2011; Liu et al., 2013; Liu et al., 2015). The main purpose of this study is to obtain evidence to support post-earthquake healthcare interventions and to establish a reference on earthquake relief.

1. RESEARCH METHODOLOGY

The data of the study covers the period from 6 February to 6 March 2023 and was obtained from the official daily reports of the Ministry of Health Health Disaster and Coordination Centre Unit (SAKOM) and the Ministry of Health. Also, This study was initiated after the necessary approvals were obtained with the decision of the Ministry of Health dated 12.05.2023 with the number E-26216721-708.99-215528364. The data consisted of allocations of rescue units, human resources, workload and other information recorded in official daily reports. The data of the emergency medical rescue system conducted by SAKOM under the leadership of AFAD were summarised and the first month of the earthquake was evaluated.

Data Envelopment Analysis (DEA) method was used to evaluate the technical efficiency of health services provided in 10 provinces affected by the earthquake in the first emergency period of the Kahramanmaraş-centered earthquake. The focus of health care efficiency analysis is the health care production of organizations, often called Economic Activity Units (UKE) or Decision Making Units (DVB), in a regional health care system (Thabrani et al., 2019). A healthcare organisation is considered technically efficient when it produces the maximum output from a given amount of input or, alternatively, when it produces a given output with a minimum amount of input. Therefore, when a health institution is technically efficient, it operates at the production frontier. DEA methods use mathematical calculations to obtain the production frontier covering all observed data. The unit of analysis used in this study is the 10 provinces affected by the

earthquake centred in Kahramanmaraş. The conceptual framework used in the study is summarised as follows based on the health services efficiency analysis model (Rogers et al., 2021):

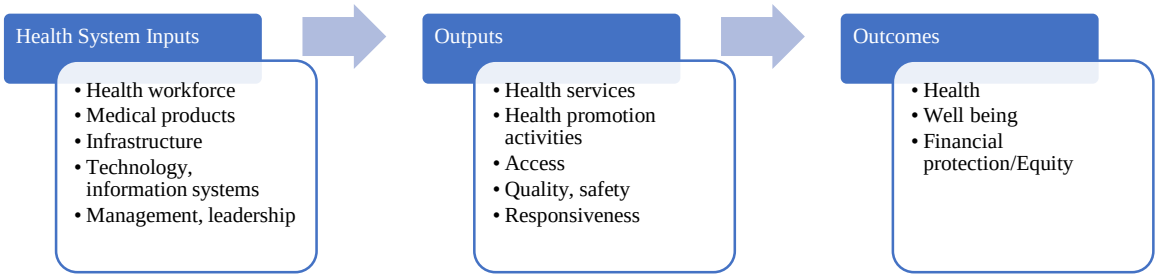

Figure 2. Health Services Efficiency Analysis Model

In previous studies on earthquake interventions, the initial emergency period was defined as the period between 24 hours and one week after the earthquake (Ardagh et al., 2012; Liu et al., 2015). In this study, the emergency period of the earthquake was defined as a total of ten days starting on the day of the earthquake (6 February) and ending on the ninth day after the earthquake (15 February), when 98.3% of all injured people were reached. Efficiency scores were also calculated for the first emergency period between 6 February and 15 February. In the study, assuming constant returns to scale, the efficiency score of each province was calculated comparatively with the province with the best efficiency.

Technical efficiency measures the ability of a decision-making unit (DMU) to produce the maximum number of programme outputs from a given number of inputs or the minimum level of inputs specified in a given number of outputs. The primary goal of health services in emergency medical rescue in an earthquake, which is primarily based on the principle of saving human life, is to save as many patients and injured people as possible as soon as possible (Liu et al., 2015). Therefore, the study has chosen the output-oriented mode.

Table 3 lists the variables used in the analysis. Input variables are the number of undamaged hospitals, the number of undamaged primary health care facilities, the number of field hospitals, the number of doctors after the earthquake, the number of newly assigned doctors and the number of UMKE personnel. The output variables are the number of injured people treated, number of operations, number of amputations and number of dialysis. DEA methods assessed the technical efficiency of each of the 10 provinces during the ten-day emergency period, based on the effects

of input on output variables. Efficiency values take a value between 0 and 1; technically efficient decision units with optimum performance have an efficiency score of 1, while inefficient decision units have an efficiency score below 1 (Thabrani et al., 2019).

Table 3. Variables used in the analysis

Input	**Output**
Number of Hospitals (undamaged %)	Total number of injured
1st level health facility (% undamaged)	Number of Operations
Number of field hospitals	Number of amputations
Number of doctors (% after earthquake)	Number of dialyses (10th day)
Number of newly appointed doctors	
UMKE Personnel	

The second analytical method used in the study is Tobit regression, which estimates (maximum likelihood estimation) the effects of the relevant variables on the efficiency of health services provided in the provinces. This approach is preferred to linear regression because DEA efficiency scores are continuous from zero to one.

Data Envelopment Analysis Programme (DEAP) 2.1 was used to evaluate the efficiency of health services with 10-day data in 10 provinces after the earthquake. Tobit regression was performed using IBM SPSS 25.0 to examine the effects of variables expected to be associated with DEAP scores. Statistical significance level was accepted as $p < 0.05$ in the analyses.

2. ANALYSIS

Personnel Management

Table 4 shows the number of doctors in 10 provinces before and after the earthquake. Graph 1 shows the number of health personnel deployed to the region in the first 5 days to provide necessary treatments and services.

Table 4. Number of Physicians

Provinces	Before the earthquake			After the earthquake			Percent change (%)
	Public	Private	Total	Public	Private	Total	
Adana	3835	759	**4594**	3160	872	**4032**	**-12**
Adıyaman	1095	45	**1140**	1053	29	**1082**	**-5**
Diyarbakır	2865	363	**3228**	2173	372	**2545**	**-21**
Gaziantep	2510	808	**3318**	2057	790	**2847**	**-14**
Hatay	2462	354	**2816**	2123	275	**2398**	**-15**
K. Maraş	1538	146	**1684**	1311	151	**1462**	**-13**
Kilis	474	5	**479**	280	5	**285**	**-41**
Malatya	1469	224	**1693**	1051	186	**1237**	**-27**
Osmaniye	759	129	**888**	582	129	**711**	**-20**
Ş. Urfa	2816	213	**3029**	2106	211	**2317**	**-24**
Total	**19823**	**3046**	**22869**	**15896**	**3020**	**18916**	**-17**

As seen in Table 4, there was a 17% decrease in the total number of doctors after the earthquake.

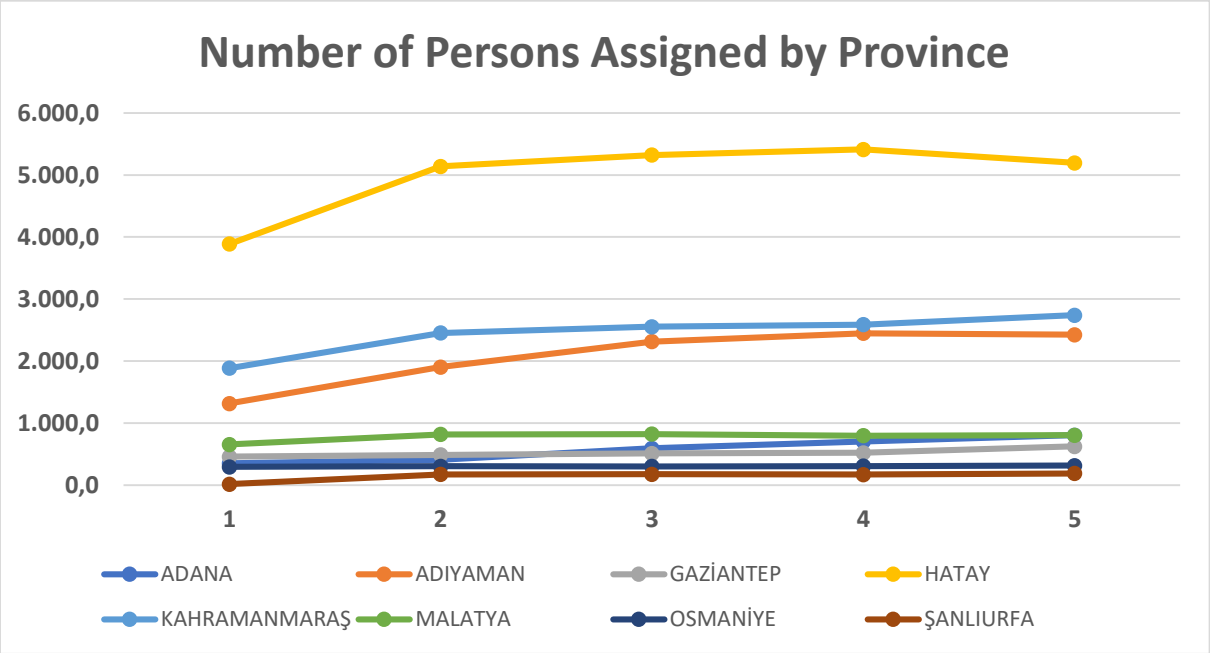

Figure 3. Number of Health Professionals Assigned to the Earthquake Region in the First 6 Days by Province

As seen in figure 3, the highest number of health personnel were assigned to Hatay, Kahramanmaraş and Adıyaman provinces after the earthquake. Table 5 shows the post-earthquake emergency health services 10th day deployment inventory.

Table 5. Emergency Health Services 10th day Assignment Inventory

		Emergency Health Vehicles		Emergency Health Personnel		Tent Units	
Provinces	**UMKE**	**Ambulance**	**UMKE**	**Ambulance**	**Emergency response unıt**	**Heavy clımate**	**Personal Shelterin g**
Kahramanmaraş	37	241	361	1040	13	3	25
Hatay	54	590	369	2391	33	3	31
Gaziantep	26	81	178	348	16	1	2
Adıyaman	74	230	547	1011	25	1	28
Osmaniye	22	36	150	162	13		6
Adana			9		3		
Diyarbakır			27		8		
Şanlıurfa			6		2		
Kilis			6		2		
Malatya	32	75	180	330	8	2	5
Air Ambulance		6					
UMKE Personnel traveling by air/land			2541				
TOPLAM	**245**	**1.259**	**4374**	**5.282**	**123**	**10**	**97**

As seen in Table 5, most emergency health personnel were assigned to Kahramanmaraş, Hatay and Adıyaman provinces after the earthquake. In the first ten days, emergency medicine, orthopaedics and traumatology and anaesthesiology and reanimation branches were the most frequently assigned.

2.1 Transfer of Injured

In the first ten days after the earthquake, 51,061 injured people were transferred to different cities by different transport options to receive necessary treatment. 95% of the injured were transferred by land, 4% by air and 1% by sea.

2.2 Health Facilities

After the earthquake, 21% of public hospitals and 17% of private hospitals were damaged. In the earthquake zone, 9.3% of 1st level health facilities were damaged (Table 2). After the earthquake, a total of 41 field hospitals were opened in Hatay, Kahramanmaraş, Adıyaman, Gaziantep and Malatya. As seen in Table 2, 14% of pharmacies were damaged in total and 72.3% of them remained open on the 10th day.

2.3 Treatment Planning

Table 6 shows the number of injured, number of amputations, number of dialysis, number of operations and number of operations performed outside the earthquake zone by provinces on the 10th day.

Table 6. Number of Injuries, Amputations, Dialysis and Surgeries by Province

	Number of injured	Amputation numbers	Dialysis numbers	Number of Surgeries	Number of operations performed outside
ADANA	26,389	59	407	335	3592
ADIYAMAN	16,144	13	3	86	1020
D.BAKIR	15,873	57	36	221	2500
G. ANTEP	16,902	75	118	311	3697
HATAY	2,606	40	62	212	2810
K. MARAŞ	11,444	33	74	159	1906
KİLİS	9,651	0	3	31	280
MALATYA	881	5	2	122	1224
OSMANİYE	8,699	2	7	61	904
ŞANLIURFA	902	51	81	235	3372
General Total	**109,491**	**335**	793	1.822	21305

As can be seen in Table 6, the injured people mostly applied to health services in Adana, Gaziantep and Adıyaman after the earthquake. The provinces with the highest number of amputations and surgeries were Gaziantep, Adana and Diyarbakır. Adana province has the highest number of dialysis patients. The provinces with the highest number of surgeries performed outside the

earthquake zone were Gaziantep, Adana and Şanlıurfa. In the first ten days, most operations were performed in the fields of gynaecology and obstetrics and orthopaedics and traumatology.

2.4 Technical Efficiency Scores

Table 7 shows the technical efficiency scores of the health services provided in the earthquake-affected provinces on the 5th and 10th day of the earthquake. While the average technical efficiency of the health services provided in the earthquake region was 52% (SD: 0.30) on the 5th day, it was calculated as 80% (SD: 0.21) on the 10th day.

Table 7. Technical Efficiency Scores by Earthquake zone

Zone	Day 5 Technical Event Scores	Day 10 technical event scores
Earthquake (10 provinces)	52%	80%

2.5 Tobit Analysis Results

The results of Tobit analysis revealed some statistically significant determinants of the technical efficiency scores of the health services provided in the earthquake zone on the 10th day (Table 8). The number of newly assigned doctors, the percentage of undamaged hospitals and the percentage of undamaged primary health care facilities were found to be statistically related with the technical efficiency scores ($p<0.05$).

Table 8. Tobit Analysis Results

Variables	**Beta**	**%95 GA**	**p**	**Adjusted R^2**	**Anova F**	**p**
Model				**%73**	**10.319**	**0.006***
Fixed	115,207	92,273-138,142	0.000*			
Number of newly appointed doctors	2,601	0.002-0.013	0.018*			
Number of hospitals (undamaged)	2,822	1,160-7,039	0.013*			
1st digit number (undamaged)	1,593	1,194-1,989	0.010*			

3. CONCLUSION AND RECOMMENDATIONS

The results and conclusions reached in this study, which was conducted to evaluate the effectiveness of health service interventions after the 6 February Kahramanmaraş earthquake, which is described as the biggest earthquake in the history of Turkey, are summarised below.

Firstly, when the technical efficiency scores of the health services provided in the earthquake-affected provinces are analysed, it is seen that while the average technical efficiency was 52% (SD: 0.30) on the 5th day of the earthquake, it increased significantly to 80% (SD: 0.21) on the 10th day. This result shows that health services in earthquake zones have started to be provided more efficiently over time. The rapid normalisation of health services in earthquake zones is an important indicator for the performance of disaster management and crisis response teams. Therefore, the increase in technical efficiency observed between days 5 and 10 indicates the ability of the teams to rapidly improve and restructure the services in the earthquake zones. The improvement trend observed in technical efficiency scores shows the flexibility and resilience of health services in the post-disaster period. This is an important lesson for disaster management and health services and this information will be utilised to better prepare for future disasters.

Second, when we look at the analysed provinces, it is observed that on the 5th day of the earthquake, Adana (100%) and Adıyaman (100%) have 100% technical efficiency scores, while the scores are at lower levels in other provinces. On the 10th day, it is observed that the technical efficiency scores in Gaziantep (100%), Şanlıurfa (89%), Diyarbakır (94%), Adana (100%) and Kilis (100%) increased significantly. This indicates that health services in these provinces were organised faster and were more effective in meeting the needs in the post-earthquake period. Analysing the reasons and practices of provinces such as Adana and Adıyaman, which had high technical efficiency scores on the 5th day of the earthquake, may provide learning opportunities to achieve similar success in other provinces. Sharing and disseminating such good practices is an important contribution to improving the efficiency of health services in earthquake zones.

On the other hand, in some provinces, especially in Hatay and Osmaniye, technical efficiency scores are still open to improvement on day 10. As a matter of fact, the damage to Iskenderun port due to the earthquake, the deterioration of the general structure of the motorways and the

unusability of Hatay airport can be shown as the most important reasons for this situation. However, with the rapidly repaired infrastructure services, the continuity of health services was ensured very intensively after the 10th day. The accessibility of health services in the first 10 days was ensured by the air, land and sea patient transfer operations, and health services were provided intensively from outside these provinces.

The tobit analysis results of the study show that newly assigned doctors, undamaged hospitals and primary health care facilities play an important role in increasing the efficiency of health services after the earthquake. These factors, which are statistically significant, are critical for increasing the efficiency of health services in earthquake zones. The fact that the number of newly assigned doctors is positively correlated with the technical efficiency scores indicates that the assignment of more doctors can increase the efficiency of health services in earthquake zones. This emphasises the importance of increasing the number of doctors for the rapid improvement of health services in the post-earthquake period. Moreover, the positive relationship between the percentage of undamaged hospitals and the percentage of undamaged primary health care facilities with the technical efficiency scores indicates that such facilities play an important role in the provision of health services. In this context, measures should be taken to increase the number and capacity of undamaged health facilities to improve the efficiency of post-earthquake health services.

The results and conclusions summarised above will be useful to improve the efficiency of health services in earthquake regions and to better understand and address the problems experienced in the post-disaster period. The technical efficiency scores varying by provinces show the geographical differences in the planning and access to health services in earthquake regions. These factors should be taken into consideration in disaster and health services management. The increase in the technical efficiency of health services shows the importance of effective communication and coordination in disaster management and health services delivery. Therefore, a well-coordinated approach at different levels and sectors should be adopted to improve the efficiency of health services in earthquake zones. To improve the effectiveness of post-earthquake health services, the importance of logistics and supply chain management should be recognised. This is particularly important for the rapid and efficient distribution of medical supplies, medicines and other health care resources. In the post-earthquake period, the importance of psychosocial support and services should not be ignored. The mental health and well-being of citizens living in earthquake zones is an important factor for the effectiveness and sustainability of general health

services. Finally, continuous monitoring and evaluation processes should be implemented to increase the effectiveness of health services in the post-earthquake period. These processes will help to measure the effectiveness and quality of services, identify areas for improvement and draw lessons to better prepare for future disasters. These conclusions can contribute to policy and strategy development processes for improving the effectiveness of post-earthquake health services and better disaster management. In addition, these results may help to identify measures to be taken to meet the needs of citizens living in earthquake zones more quickly and effectively. In this study, which was evaluated at the end of the 10th day after the 6 February 2023 earthquake, technical efficiency in health services reached 80%. As the last word, the Republic of Turkey, which has managed a major disaster unprecedented in the world throughout history, has produced strategies to be taken as an example.

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Editorial

The Use of NFT As A Payment Method In Health Tourism

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Abstract

Health tourism is a rapidly growing health service model in the world. Today, its use by health service demanders has become widespread. Health tourism sector is a sector that combines health and tourism, where individuals who demand health services can receive treatment services by travelling. In the health sector, where technology is used intensively, innovative approaches are emerging in the provision of health services. NFTs (Non-Fungible Tokens), a new digital asset that has emerged in recent years with the development of blockchain, offers different usage areas in health tourism with its features. NFTs are defined as unique digital assets and are supported by blockchain technology. This new approach offers innovative opportunities for health tourists and health tourism organizations, data security and payment methods. This innovative technology can make the health tourism experience more transparent and secure. This study is

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expected to contribute to the sector with an innovative alternative payment method of practitioners in health tourism, which is an international service model.

Keywords: Health Tourism, Health Management, Blockchain, NFT, Smart Contracts

INTRODUCTION

Health tourism is a type of tourism that refers to the medical services that people traveling to a country receive to meet their health needs and the touristic experience they experience in this process. The academic literature of this field is quite extensive and covers many disciplines.

Health tourism is researched by academics working in the fields of health services, tourism and economics. Studies in this field address the economic, social, cultural and political impacts of health tourism, travelers' preferences, sustainability and management of health tourism. The benefits of health tourism include the ability of travelers to access quality health services at more affordable prices, the contribution to the economic development of health tourism destinations, the employment of workers in the health tourism sector, and the social and cultural impacts of health tourism. However, health tourism also has some negative impacts, for example, it can threaten the sustainability of health tourism destinations and cause travelers to lack information about health services and be deceived.

The health tourism sector needs to keep pace with today's technology and transparency. In this way, strong relationships in terms of reliability and confidentiality will contribute to the strengthening of this sector. Health tourism is an academic field and research in this field has an important role for the sustainability and management of the sector. As a result of our literature review, we did not come across a study on our research topic. Therefore, we decided to conduct a study.

The use of NFT technologies in the health tourism sector has the power to provide new opportunities for both the health and health tourism sectors. NFTs are defined as unique digital assets and can be stored securely thanks to blockchain technology. It will also be possible to use NFTs for marketing purposes in the health tourism sector. For example, a health tourism company

may offer specially designed NFTs to patients travelling for a medical procedure or treatment process.

In our research, we aimed to examine the benefits of using NFT as an alternative to out-of-pocket payment method in health tourism. In line with this purpose, the first section focuses on health tourism and its sub-branches; in the second section, what is NFT and how does it work? We tried to explain blockchain and smart contracts, NFT advantages and disadvantages, NFT technologies in health tourism procedures.

In conclusion, the use of NFT technologies in the health tourism sector may provide new opportunities to the sector. While these technologies they can also add value to the sector with their use for marketing purposes. As a result of the literature review, no study related to the research topic was found. Therefore, it was decided to present this study in order to contribute to both the literature and the sector.

1. THEORETICAL FRAMEWORK

1.1 Health Tourism

In addition to the economic benefits it provides to a country, health tourism is a sector that provides many benefits such as improving the health service standards of countries, integrating technology and developing international relations. Demands for health tourism depend on many factors. These include financing of health services, quality of health services, national income per capita, waiting times, health legislation, transportation potential, efficiency of the tourism sector, political, psychological and socio-cultural factors. For health tourism marketing, two main factors are identified: internal factors and external factors. Endogenous factors refer to the factors of a country's own country that push people to prefer to be treated in different countries due to the problems experienced in the health system of a country. Exogenous factors, on the other hand, refer to the attractive factors of the country that individuals intend to go to for healthcare services other than their own country (İldaş, 2022; Şengül & Çora, 2020; Sag & Zengul, 2019).

Turkey has become an important health tourism market thanks to its health infrastructure and technology, as well as the presence of private and public health institutions with qualified

manpower and high quality standards (Tontuş, 2015). In our age where information is easily accessible with the increase in the welfare and education levels of individuals, it has become a necessity to increase the quality of service in health and to develop infrastructures as a result of the increase in the number of tourists and the increase in international demand for Turkish health services (10th Development Plan).

The demands of health tourists are related to many factors such as countries' gross national product per capita, quality of health services, cost of health services, transportation conditions, quality of the tourism sector and political factors. In order for a country to compete in health tourism, health service standards must be high and continuously improved (Demirer, 2010). The differences of health tourism from other sectors include factors such as being less affected by general economic conditions, creating demand in alternative markets, providing quality and price advantages, and patients choosing health facilities without knowing and seeing them (Crooks et al., 2010; Tontuş, 2018).

Developments in health tourism and the impact of factors affect not only the health tourism sector, but also the economy, health sector and culture of countries. (Garcia-Altes, 2004). It is estimated that a total of 608 to 635 billion dollars is spent on health tourism worldwide every year, which is a very large amount of expenditure. This data shows that the health tourism sector has a significant economic potential worldwide. Moreover, with the growth of the health tourism sector, new business opportunities are created for health institutions, travel agencies, hotels and other tourism service providers. Therefore, the health tourism sector not only meets the needs of patients but also promotes economic growth (Ridderstaat and Singh 2020: 38; Carrera and Bridges, 2006). As Helmy states, the scope of health tourism is a very broad concept. In this context, it can focus on many areas such as health services, surgical procedures, plastic surgery, spa, cure treatment, rehabilitation, alternative therapies, and leisure. Health tourism can also be defined as the mobility of people traveling to different destinations for healthy living and treatment purposes and all the services offered in this field (Lee and Kim, 2015). The reasons for such travel can include a range of reasons such as medical treatments, surgeries, rehabilitation, alternative therapies, spa and cure treatments. Health tourism has an important place in the healthcare market and has become increasingly popular in recent years. While affluent people used to travel to less developed countries to access better facilities, nowadays people prefer different countries to get more

affordable prices, better quality services or specific medical treatments (OECD 2011: 6). Health tourism can be categorized into four groups according to the needs and expectations of the tourists in the target market, the types of treatment and the differences in the resources used: Medical Tourism, Advanced Age and Disability Tourism (Elderly Care and Disability Care Tourism), Spa and Wellness Tourism and Thermal Tourism (Güzel and Şahin, 2017:53)

1.1.1. Main Reasons for Health Tourism

Some factors affecting health tourism can basically increase the demand for health tourism. These factors can be listed as follows: quality health services and health professionals, adequate number of health tourism personnel, the desire to have a vacation during or after treatment, expensive health services in their own countries, patients' search for better quality health services, climate and geographical conditions suitable for vacation, the desire to travel to a country where thermal facilities and tourism opportunities are abundant, the desire of chronic patients, the elderly and the disabled to try health services in other countries and to visit them, the desire of dependent patients to continue their lives in an environment different from the environment they live in (Garcia-Altes, 2005).

In addition to these factors, there are other factors such as overcrowding or long waiting times in health systems in some countries, unavailability of medical devices or medicines required for treatment in the home country, finding solutions to language problems of foreign patients and providing a communication channel where they can easily get information about health services, use of advanced technological devices, The provision of lower-priced treatments compared to other countries, the effective promotion of health tourism services and the provision of airport transfers, hotel reservations and easy transportation during the treatment process, making it easier for health tourists to travel to the country they will visit are among the factors that affect health tourism. In addition, the fact that health insurances in some countries cover health services abroad can also be seen as a factor that encourages health tourism (Asadi et al. 2019).

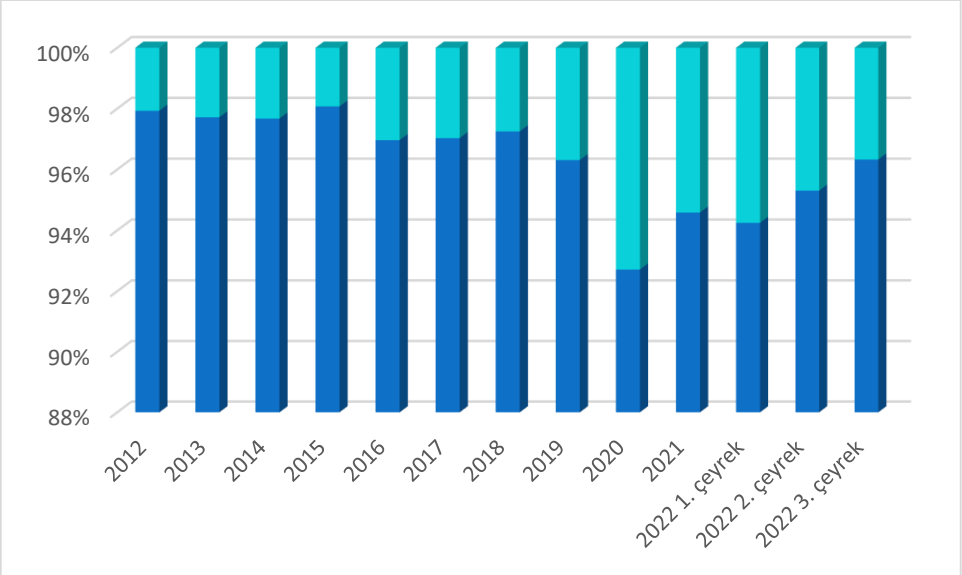

Figure 1: The place of health tourism in Turkey's tourism revenues, TUİK 2023.

As can be seen from the table/figure showing the place of health tourism in all tourist revenues, health tourism is an important and focused issue for Turkey. Among the reasons why Turkey is a potential country for health tourism, there is the existence of many healthcare institutions that have both national and international service capacities. The healthcare sector in Turkey is rapidly developing and has the necessary infrastructure for health tourism. Health tourism is an important economic source of income for Turkey, and necessary steps are being taken to ensure that the country remains competitive in the field of health tourism (İldaş, 2022; Şengül ve Çora, 2020; Sag ve Zengul, 2019). -

1.2.What is NFT and How Does It Work?

1.2.1. Blockchain and Smart contracts

Blockchain technology has emerged as a distributed database of sequential transactions stored in interconnected blocks (Tyan, 2021). As the first application area, the cryptocurrency Bitcoin was created by Satoshi Nakamoto in 2008 and attracted great interest in the global market (Nakamoto, S. 2008). Bitcoin is a virtual cryptocurrency that allows payments to be made anywhere in the world with low transmission costs without the need for the approval of a central authority and does not depend on a central government (Mukhopadhyay et al. 2016). Blockchain technology is widely

used today as a distributed record management system widely used in Bitcoin transfers and provides a secure, transparent and decentralized system (Kırbaş 2018). Today, the concepts of virtual currency bitcoin and blockchain are often confused. Blockchain technology uses complex mathematical algorithms to protect the accuracy and integrity of transactions. Thanks to these features, blockchain technology can be used in many different fields (Davidson, S.; De Filippi, P.; Potts, J. and Disrupting Governance 2016).

Blockchain is defined and used as a decentralized database formed by the continuous addition of immutable blocks one after another (Yılmaz 2022). Blocks are cryptographically linked to the previous block to form a chain. This technology records transactions between parties in a transparent, verifiable and irreversible way. Blockchain is used to create the infrastructure of cryptocurrencies and ensures the security of transactions with complex mathematical algorithms (Zhang et al. 2019).

Blockchain technology has been evolving since 2008, when it was defined, and its attractiveness is increasing even further by integrating new forms of it in many fields (Parrales, 2022). In 2013, Vitalik Buterin introduced a new blockchain platform called Ethereum as an open-source universal, distributed computing platform that contributes to the development and expansion of financial applications on the infrastructure of the blockchain (Buterin, 2013; Consensys, 2022). It is a platform that allows anyone to create economic and financial applications that set their own rules and determine the conditions under which money and property change hands. These applications are activated through smart contracts that are automatically triggered when certain conditions are met (Vujičić et al., 2018).

Traditional contracts are agreements between two parties for a specific transaction. However, in such contracts, there can be a lack of trust between the parties and there is always a risk that one party will not fulfill its obligations. Smart contracts are designed to eliminate this lack of trust. They are software made up of digital code and are automatically executed between the parties. This protects against fraudulent actions from either party. When used with blockchain technology, smart contracts provide transparent and irreversible transactions that are executed reliably (Kshetri, 2018).

Smart contracts are a technology that increases efficiency and reduces operating costs in many different industries by offering advantages such as high levels of security, automatic transaction execution, instant verification and transparency (Swan, 2015, Reyna et al., 2018). These contracts eliminate the need for trust between the parties by having a kind of software agreement to fulfill the given obligation (Temizkan & Kızıltaş, 2021). Due to these features, smart contracts are used in many sectors such as finance, healthcare, real estate, insurance, supply chain management, and many more (Swan, 2015). With the use of these applications, the adoption of smart contracts is increasing and is expected to become even more widespread in the future.

1.2.2. Definition of NFT

"Non-Fungible Token" (NFT) (Yeliz and Deniz 2022), which is defined as "coin that cannot be imitated" in Turkish, is used in the literature; "non-fungible token" (Çallı, 2021), "non-fungible token technology", "non-fungible token", "non-fungible token" (Özirili, 2021), "non-fungible rare assets", "unique non-fungible asset", "unique non-fungible asset" (Dursun, 2021), "non-fungible token" (Şağban, 2021), "non-fungible chip" (Arapoğlu, 2021) (Ustaoğlu, 2022).

NFTs are a non-fungible currency created through Ethereum smart contracts, which cannot be exchanged (Oral, 2022). The term "Non-Fungible Token" gained popularity during Ethereum discussions in 2017 (Parrales and Batbayar, 2022), and in 2018, William Enriken, Dieter Shirley, Jacob Evans, and Nastassia Sach of Ethereum formalized a new standard for non-fungible tokens, ERC-721, which explains how NFTs can be created on the Ethereum blockchain, managed on other blockchain platforms or interfaces, and how ownership and exchange can be ensured (Pirnay et al., 2023). Since then, various standards such as ERC-998, ERC-1155, ERC-875 have been developed and emerged.

NFTs are a technology that allows for the unique identification and recording of ownership of digital assets. This technology enables the traceability of ownership of digital assets, making it difficult to copy, counterfeit or alter them (Wang 2021). From a technical perspective, NFTs are defined as a data unit that has a digital ownership certificate, confirming that it is a unique digital asset that is stored on a blockchain and cannot be changed (Evans, 2019).

1.2.3. NFT Advantages and Disadvantages

Since NFTs are built on a blockchain-based ecosystem, there are potential advantages and disadvantages. The advantages of NFTs are eliminating intermediaries in the market environment, improving the chain of custody, streamlining processes and increasing market volatility. NFTs recorded on the blockchain with smart contracts have independent records of authenticity and ownership, preventing them from being misused and stolen. By preserving the rarity and authenticity of each NFT, market confidence is increased. The creation of unique digital assets allows for the ownership of one-of-a-kind pieces (Brock, 2022).

Disadvantages of NFT; high minting costs can be costly, especially when considering the fees charged by blockchain transactions.Pricing and valuations may vary according to market conditions. The fact that it is a new technology and not everyone is familiar with these digital assets and the energy generation related to blockchain technology, including NFTs, cause concerns about environmental impacts (TechQuintal 2023).

Since NFTs are based on a blockchain-based ecosystem, there are potential advantages and disadvantages.The advantages of NFT; It improves the chain of custody by eliminating intermediaries in the market environment, facilitates processes and increases market volatility. NFTs recorded in the blockchain with smart contracts have independent authenticity and ownership records, which prevents them from being misused and stolen. By protecting the rarity and authenticity of each NFT, market confidence is increased. By creating unique digital assets, it allows the creation of one-of-a-kind pieces.

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1.2.4. How NFTs are Created and Used

Although it always exists digitally, its basic existence can be digital or physical (Pirnary 2023). The ownership of abstract digital jpegs, videos, images, tweets or any other digital asset created in a virtual environment or tangible items used in the real world can be used in blockchain NFT

technology for artwork, event tickets, selling a car, selling shoes, etc. (Wilson et al. 2021). Artists and the art industry have played an important role in the growing popularity of NFTs). With the inclusion of smart contracts, NFT technology enables the digital transfer of ownership with a transparent provenance history (Delapline 2021). In 2021, the economic size of NFT sales on the Ethereum blockchain alone was $41 billion, growing tenfold from 2018 to 2020 (Chainalysis 2022; Statista 2022).

NFTs are attracting the attention of both investors and many different sectors in terms of usability. Blockchain technology and NFTs offer a unique opportunity for artists and content creators to monetize their work. The rapid growth of blockchain technology and its many innovative elements are likely to increase the interest in NFTs and increase their usability in real life (Doan et al. 2021). Although this asset is still in its infancy, it may be possible to use it as a differentiated marketing and out-of-pocket payment method in the product and service sector by adapting the legal and regulatory concerns it raises to the conditions suitable for our country. Considering the rapid growth of the industry and worldwide trends, it has emerged as a viable technology that consumers can adapt to virtual and real life and is worth developing by incorporating it into new business models and strategies (Parrales 2022).

1.2.5. Different Types of NFT, Their Properties and Usage Areas

When the characteristics of NFTs are analyzed, five main characteristics emerge. These are provision, non-interoperability, indivisibility, indestructibility and verifiability. When we evaluate NFTs based on these five characteristics, the most striking feature is their limited availability. NFT developers aim to increase their value by keeping the supply of collections limited (Conti 2022). Since NFTs represent the whole, they are indivisible, represent a single entity and cannot be destroyed. All this is realized through blockchain technology, which stores and powers the data. It derives its immutable property from smart contracts and maintains its immutability in the blockchain (Leech 2021; Geroni 2021).Thanks to blockchain features, it is also possible to verify all historical events and transactions recorded in data blocks. With this feature, verification can be done and it is also possible to trace information such as who the NFTs have been widely used in artistic collections, metaverse and virtual world applications, the sports industry, the fashion industry, the gaming industry, and technology initiatives in this direction (Wang 2021). In Pirnay's (2023) study of 46 startups operating in the field of NFT, 52% of NFT startups operate in the

luxury industry, while 48% target the general public. Clothing and accessories 43%, sports and entertainment 24%, food and beverage 21%, luxury automobile 7%, health and beauty care 5%.

In our country, the perspective on digital assets has developed and in this field, in February 2023, TOGG (Turkey Automobile Joint Venture Group) realized a special series sale "0001 to 2023 series" and pre-order purchase as NFT through the "Tru.More" application in the car launch sale. In Turkey, the JVG has taken an important step towards real asset sales through NFT.

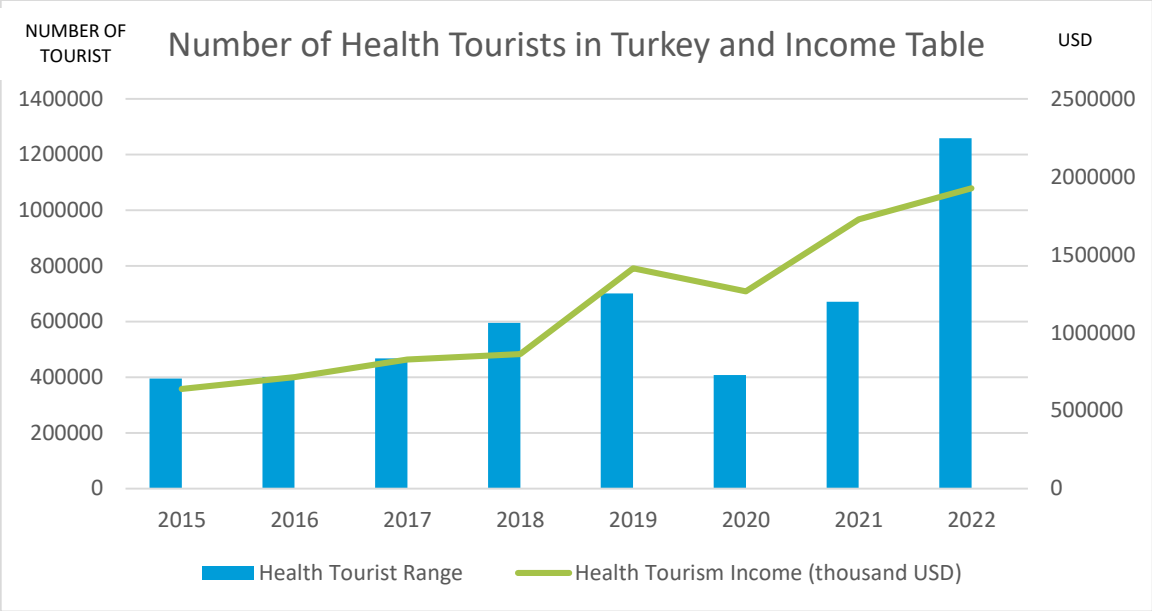
In recent years, international demand for healthcare services in Turkey has been increasing and the stakeholders in the health tourism sector, which operates to provide these services, have been developing rapidly. In our world where technology is developing rapidly, the use of NFT technologies in health services and health tourism applications, taking into account the innovations in mobile payment methods and marketing opportunities, seems possible to bring new opportunities to the sector with a different perspective.

Although it is possible to implement innovative initiatives with the use of Blockchain and NFT in Healthcare Services, our study was conducted specifically on health tourism and NFT applications.

While innovative initiatives can be implemented using Blockchain and NFT use in healthcare services, our study is specifically focused on health tourism and NFT applications..

1.3.NFTs as Digital Assets and Their Use in Health Tourism

Medical health tourism is a trend that has gained significant popularity in the world and in our country in recent years. Every year, more and more people in the world purchase healthcare services from different countries to access healthcare services. The global medical tourism market was worth USD 21.42 billion in 2022 and is expected to reach USD 93.9 billion by 2030 (marketresearchfuther.com, 2022). Within the scope of medical health tourism and tourist health, 1,258,382 people visited Turkey in 2022 and an income of USD 1,926 million was generated (Uhsas, 2022).



Source:Tuik Aktaran Uhsas 2022

The number of NFT users in the world increased significantly between 2020 and 2022, reaching 44.29 million people in 2022. In this perspective, the number of NFT users is expected to reach 64.45 million users by 2027 (Statista , 2022). When evaluated in terms of Health Tourism, it is expected that a person who wants to purchase health services in a different country will also use NFTs as an alternative pocket payment method to the interbank payment method. NFTs are traded in cryptocurrencies and it is necessary to first purchase a cryptocurrency and keep it in a wallet (garantibbva.com, 2022). An easily payable and secure health tourism NFT that appeals to existing crypto or NFT users may contribute to the health tourism sector in terms of marketing and payment methods. Because, while the total number of digital asset users is expected to reach 412 million people in 2027, a new approach will be used to enable users to evaluate and use their assets in real life (Statista, 2022).

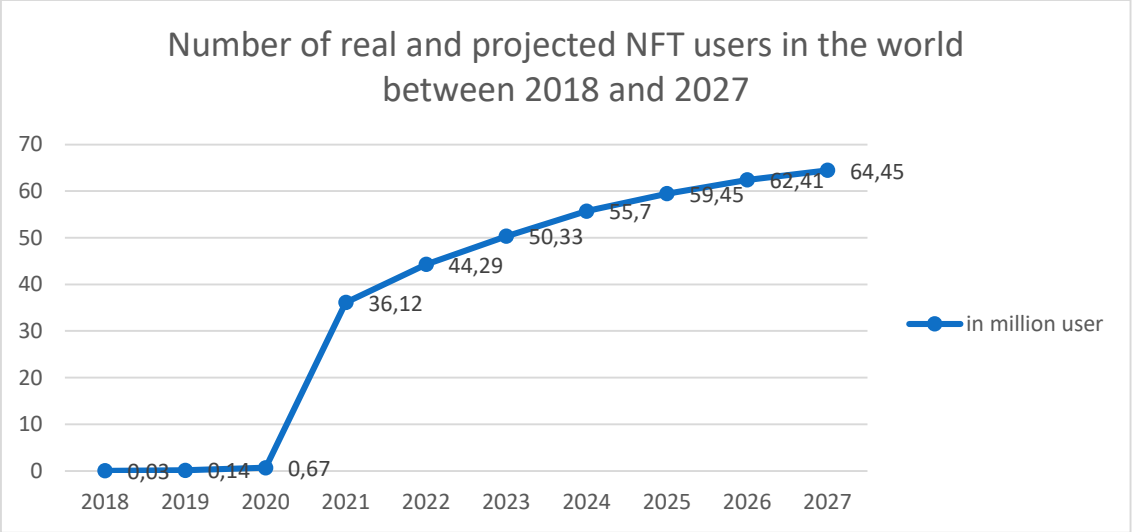


Figure 2: Number of real and forecast NFT users in the world between 2018 and 2027 Most recent update Mar 2023 Source: Statista

NFT marketplace platforms have an important place with their infrastructure in the adaptation of the use of NFT technology in health tourism. According to 2022 data, OpenSea NFT trading and creation platform dominates 87% of the market. (statista, 2022). The NFT market showed a significant increase in economic volume in 2019-2021, and the OpenSea platform had a significant share as an NFT marketplace. With the global adoption of the cryptocurrency market and innovative developments in Blockchain technology, the use and growth of NFTs is expected to increase further (White, Mahanti, & Passi, 2022).

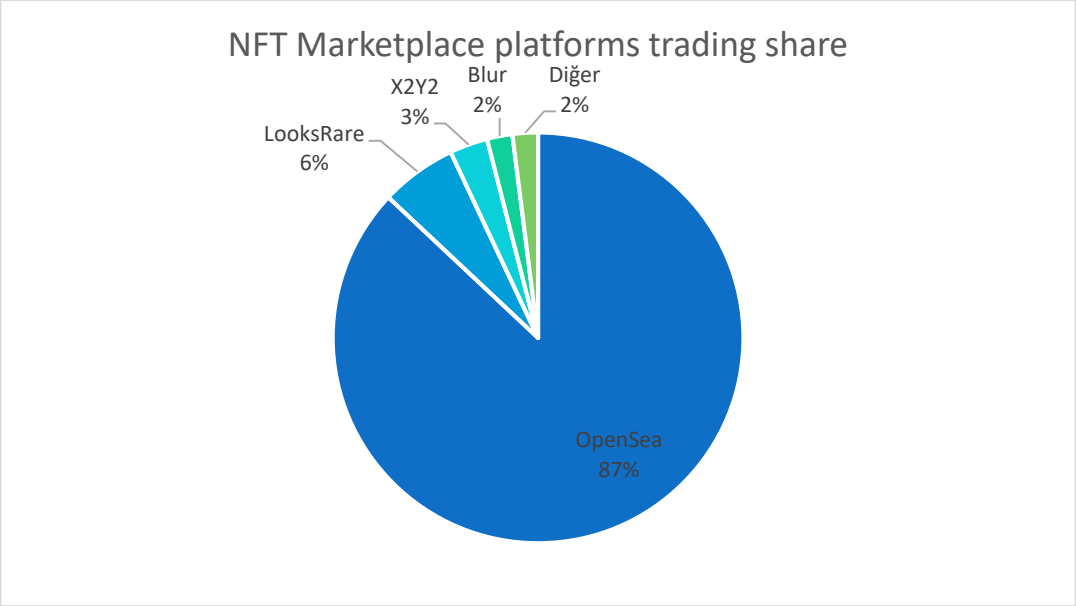


Figure 3: NFT Marketplace platforms trading share

Source: https://www.statista.com/outlook/dmo/fintech/digital-assets/nft/worldwide#key-players Accessed: 27.03.2023

Today, NFTs are widely used as investment instruments by users around the world (Pirnay, 2023). Especially in countries where health tourism is carried out, health institutions, public institutions and travel agencies are working on the development and implementation of blockchain-based applications (Castro, Tito, Brandao, & Gomes 2019).

With the development of innovative technologies, service providers in the health tourism sector must constantly follow innovative approaches to increase the satisfaction of health tourists and increase their market share (Ying, Jia, & Du, 2018). For health tourism service providers, blockchain technology is an important innovative approach that is expected to affect the sector, while smart contract NFTs are the innovative approach of the future that can be adapted to the health sector (Rejeb, Keogh, & Treiblmaier 2019).

NFTs, which can currently be used in many different sectors, are expected to be used by intermediary and provider organizations providing health tourism services in the future. In a world where developments regarding diagnosis and treatment as well as financing and payment methods

are very rapid, the development and implementation of innovative blockchain-based NFT new mobile payment method in health tourism is expected to bring a different approach to the sector (Barkan and Tapliashvili, 2018).

1.4.NFT Utilisation Model in Health Tourism Procedures

Health tourists perform a number of preliminary stages to receive services. These stages consist of several stages such as obtaining information, finding a health tourism provider, transfer, medical control and medical mudale (Tyan 2021). At this stage, NFT can facilitate some stages in the health tourism pre-stages processes.

When selecting treatment packages, medical tourists may have to contract higher prices than the actual costs of healthcare providers (Rejeb et al. 2019). Therefore, implementing the use of NFT can enable them to purchase health services without intermediaries. At this point, health service providers will create. With smart contract NFTs, it may be possible to purchase treatment packages, the content of these packages, and the facilities they provide through the NFT platform with smart contracts (Tyan 2022). With a blockchain-based application that ensures the source, quality and transparency of data, health tourists can verify the qualifications and certifications of service providers and ensure that costs are the same for everyone.

Easy, direct and secure transactions can be created without the need for third parties. Therefore, an easy, fast and reliable structure for out-of-pocket payment transactions between health service providers and health tourists can be created.

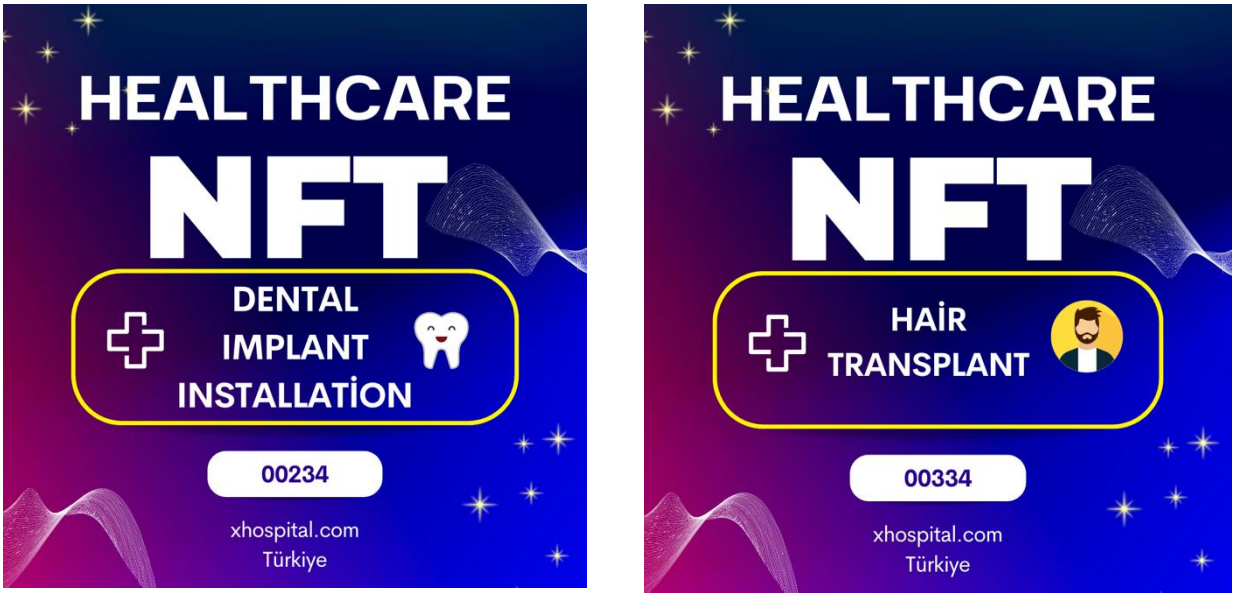


Figure 4: Examples of NFTs

While the above is an example of an NFT designed to be used in health tourism, the designed NFT images will only gain value when they are offered for sale on an NFT platform with a blockchain smart contract. Simply using the image is not enough to purchase healthcare services. Service-specific NFTs will be usable with a blockchain-based infrastructure to be developed.

2. CONCLUSION

Health tourism is an important sector that contributes to the economic and social development of countries. Especially in Turkey, health tourism has a significant potential within the scope of foreign currency earning services. For this reason, the Ministry of Health has included health tourism in the 2014-2018 Tenth Development Plan and the 2023 health vision and aims to make Turkey a world leader (10th Development Plan).

Health tourism also makes significant contributions to the health systems of countries. Countries can benefit more from health tourism by building infrastructure for health tourism, raising quality standards in health services, increasing the competence of health professionals and developing effective marketing strategies on the international platform. Health tourists consider many factors when choosing the institutions where they will receive health services.

These include service quality, cost advantage, success of health professionals, and geographical proximity. For this reason, countries should take into account these criteria of health

tourists and increase their health tourism potential by increasing the quality standards in health services, creating price policies, establishing a transparent management approach and keeping up with technology, while at the same time providing cost advantages (İldaş, 2022; Şengül & Çora, 2020; Sag & Zengul, 2019).

In February 2023, the number of foreigners visiting Turkey increased by 21.35% compared to the same month of the previous year. In January-February 2023, the number of foreigners visiting our country increased by 37.31% compared to the same period of the previous year (https://yigm.ktb.gov.tr/TR-9851/turizm-istatistikleri.html). These data show that the potential of health tourism in Turkey is gradually increasing and Turkey continues to become a center of attraction in terms of health tourism. However, it is important to continuously improve service quality, increase competitiveness and develop marketing strategies for a continuous development and rise. However, increased potential for health tourism can also contribute to improving the overall quality of the healthcare system in Turkey and reducing inequalities in access to healthcare services.

Patients travel for care for a variety of reasons, including the availability of specialized treatments, access to the latest procedures, long waiting times or high costs of care in their home countries, or the desire to heal away from friends and colleagues. Often large and crossing international borders, medical tourism can be difficult to pay for and reconcile. Patients are never quite sure they are paying the right amount. Worrying about whether their payments have been received properly is counterproductive for health and recovery. On the health facility side, reconciliation issues for international payments can also be very complex and time-consuming. Healthcare facilities find it difficult to match payments to specific patients and procedures and often face additional processing fees for these payments. Most processes tend to be highly manual with a lot of room for error. As facilities seek to attract more medical tourists, they will have to consider the impact of managing larger volumes of cross-border payments for their patients and their own operations. If healthcare facilities already serve a large number of international patients and/or plan to attract more in the coming years, the issue of patient payments is something to consider as the number and frequency of payment-related questions and queries will increase at all hours and in a variety of languages as patients around the world pay large sums of money across different time zones. With health tourism becoming increasingly important, patients are looking

for more cost-effective and transparent channels to make their payments. Web-based payment options allow patients to make out-of-pocket payments quickly and securely, while also relieving the burden on the support services of hospitals and other healthcare organizations. In addition, offering international patients familiar payment options in their local currency can make a significant difference to the patient experience. Channels that offer discounted currency conversion rates will also be more attractive to patients. Therefore, developing web-based out-of-pocket payment systems for the medical tourism sector can help medical tourism services become more competitive in the international market.

Payments in medical tourism are often an afterthought, but as international medical travel becomes more common and more funds change hands, they will become more important for both payers and payees. For healthcare organizations, providing a stress-free, localized payment experience for international patients can improve customer satisfaction and provide a competitive advantage. Moreover, proper collection of payments is also important to ensure the financial stability of healthcare organizations and manage cash flow. Therefore, it may be beneficial for healthcare organizations to establish a payment infrastructure that facilitates and securely processes international payments and collaborate with specialized financial institutions.

For Health Tourism providers to implement a reliable payment alternative to out-of-pocket payments for crypto users, they first create an Opensea platform account or dedicated platform. The healthcare provider needs to create a collection of digital custom-designed NFTs in limited supply. The created NFTs are uploaded to the system with a description of the healthcare services provided. The real price of the healthcare service is determined in ETH and the NFT is put up for sale. The buyer pays in ETH and the cryptocurrency value transferred to the seller account as ETH is converted into the crypto account or currency of the relevant healthcare provider and transferred to the bank account. Payment transactions are completed with these stages.

From the moment the purchased Health Tourism NFT is transferred to the buyer's account, the right to use health services arises according to the characteristics of the purchased NFT. Although the NFT usage period is unlimited, it can also be transferred to another person. However, the health service provided by a single NFT can only be used by one person. When the health tourist wants to benefit from the right to use healthcare services according to the characteristics of

the NFT, the service fee payment will be realized when the health service provider of the NFT in his account as a payment method transmits it to the payment confirmation account.

With this method, the right to access health services provided safely without being affected by price changes will remain indefinitely reserved. The importance given to confidentiality is also among the reasons for choosing health tourism (Lunt et al., 2011). In addition to procedures such as abortion that do not take place in individuals' countries, services such as diagnosis and treatment that they do not want to be known in their country will ensure the privacy of the individual while receiving the service by defining an interface with the NFT method. With the use of NFT in health tourism, it is envisaged to conduct research and studies to provide high confidentiality, accessibility and unmediated service opportunities and to develop innovative methods in this direction.

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