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JHMT Editorial

International Journal of Health Management and Tourism

The Impact of Health Tourists' Brand Perceptions Towards Private Hospitals on Health Tourism: The Case of Istanbul Province [a]

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Abstract

This study investigates health tourists' brand perceptions of private hospitals in Istanbul. Medical tourism refers to individuals traveling abroad to receive preventive, curative, or rehabilitative healthcare services. Cost advantages, speed, and quality are key motivators for seeking healthcare in other countries. We conducted semi-structured face-to-face interviews with 11 international health tourists and applied thematic content analysis. The findings indicate that health tourists predominantly access health-related information through internet news, Instagram, and Facebook. Separately, the main factors influencing hospital selection include a history of successful procedures, quick results, trust, affordable pricing, accessible information, recommendations, quality of service, and overall satisfaction. Brand image elements identified by participants include

[a] This article is derived from a master's thesis completed by the first author under the supervision of the second author.

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hygiene, trust, network affiliation, competent doctors, positive reviews, and successful medical outcomes. These insights can guide private hospitals in enhancing social media strategies and procedural transparency to strengthen brand image.

Keywords: Health tourism, brand perception, qualitative content analysis, international patients

INTRODUCTION

This study investigates international health tourists' brand perceptions of private hospitals in Istanbul. Medical tourism refers to the cross-border travel of individuals for medical, surgical, or wellness services. This growing global phenomenon encompasses a wide array of treatments such as cosmetic surgery, dental procedures, in vitro fertilization, cardiac and cancer treatments, eye surgeries, and organ transplants (Spoladore, 2021). In addition to curative services, medical tourism also includes spa treatments and wellness therapies that aim to promote mental, physical, and spiritual rejuvenation (Khairunnisaa and Hatta, 2017).

Medical tourism is generally categorized into three major branches: curative medical tourism, thermal/wellness tourism, and senior tourism. Curative medical tourism involves patients seeking more affordable, high-quality, and timely healthcare abroad (Connell, 2011). Thermal tourism focuses on the healing properties of natural hot springs, while senior tourism allows older adults to access healthcare services while enjoying cultural and recreational activities that enhance their quality of life (Oliveira Campos et al., 2017).

The global demand for medical tourism continues to increase due to rising healthcare costs, long waiting times, and physician shortages in many developed countries (Hanefeld et al., 2015). Recent studies further emphasize the growing importance of medical tourism in the post-pandemic context. Zhong et al. (2024) found that tourists have become increasingly interested in both wellness-oriented and medically necessary travel following COVID-19, highlighting the dual importance of curative and preventive services in shaping tourism demand.

Countries such as Thailand, Malaysia, India, Germany, Israel, and the United States have emerged as prominent players in this sector. In recent years, Turkey has positioned itself as a competitive destination, offering advanced medical infrastructure, skilled healthcare professionals, cost-effective services, and rich cultural assets (Çubuk, 2022). Cities such as Istanbul, Ankara, Izmir, Antalya, and Bursa offer a wide range of medical services including cosmetic procedures, fertility treatments, transplants, and ophthalmological care. Turkey's potential in thermal tourism

is also noteworthy. Collaboration between hospitals and hospitality establishments has made the country particularly attractive to patients from Europe, Russia, and the Middle East (Üstün and Uslu, 2022).

Healthcare institutions in Turkey must compete not only through clinical success but also through brand perception. Therefore, it is essential to prioritize branding by selecting high-value products and services tailored to target markets and by emphasizing differentiating features from other countries (Tengilimoğlu, 2021). Brand perception refers to the impressions patients develop based on factors such as trust, service quality, hygiene, transparency, and overall satisfaction. In a study conducted with health tourists in Istanbul, Çetin and Başal (2024) found that trust in the brand directly influences the potential of health tourism, and that social media marketing significantly reinforces this effect. Similarly, Cham et al. (2020), in a study conducted in Malaysia, emphasized that social and marketing factors such as social media presence, word-of-mouth communication, advertising, and pricing are key contributors to hospital brand image. Their findings also indicate that brand image positively affects perceived service quality, patient satisfaction, and behavioral intentions. Rahman et al. (2022) further revealed that destination brand equity significantly influences tourists' intentions to revisit a health tourism destination. Brand association and trust were identified as key mediating factors in this relationship.

These findings suggest that in order to gain competitive advantage in medical tourism, countries and institutions must go beyond service delivery to strategically manage how their brand is perceived by international patients. In this context, the present study aims to explore the brand perceptions of international patients receiving treatment at private hospitals in Istanbul. The findings will provide insights to help private healthcare institutions enhance their branding strategies, digital outreach, and service quality. Ultimately, the study seeks to contribute to strengthening Turkey’s competitive positioning in the global medical tourism market.

1. RESEARCH METHODOLOGY

1.1. Research Design

The study was designed to examine the brand perception created by institutions or organizations that health tourists or expatriates seeking medical care in our country rely upon. The study aims to reveal the brand perceptions of private hospitals in a significant medical tourism destination, such as Istanbul, and to aid in understanding the competition within this sector.

This research was planned as a qualitative study, with data collected through in-person interviews with foreign patients. The data collection process was carried out between April 2023 and October 2023, allowing sufficient time to reach a diverse group of participants and ensure thematic saturation. Ethical approval for the study was granted by the İstinye University Social and Human Sciences Research Ethics Committee (Decision No: 36, File No: 2023/03, Date: 23.03.2023), and informed consent was obtained from all participants prior to the interviews.

1.2. Sampling and Data Collection

The study was conducted with 11 international health tourists who traveled to Istanbul for medical tourism. Participants were selected through purposive sampling, based on the following inclusion criteria:

- Aged 18 or older
- Not residing in Turkey
- Traveled to Istanbul specifically for medical treatment
- Received healthcare services at a private hospital
- Reached Turkey via a health tourism intermediary or agency
- Willing and able to participate in a face-to-face interview in English or via a translator

The sample size was determined according to the principle of data saturation, which is widely used in qualitative research. During the interview process, recurring themes began to emerge, and after 11 interviews, no new significant information was being obtained. This indicated that thematic saturation had been reached. In addition, practical constraints, such as the limited number of accessible foreign patients and the time frame of the study, also influenced the final sample size.

The data were collected through face-to-face, semi-structured interviews conducted with participants who met the inclusion criteria. Interviews were scheduled after participants had completed their treatment experiences, ensuring that the full medical tourism process—from initial contact with intermediaries to post-treatment reflection—was captured. Interview data were recorded in the form of detailed field notes. During the data collection phase, open-ended, semi-structured questions were developed based on an initial theoretical framework. The final interview guide was refined through feedback from three subject-matter experts. All interviews were conducted in person and in the same physical environment as the participants.

1.3. Data Analysis

The collected data were first systematically and clearly organized using descriptive analysis techniques. Subsequently, an in-depth content analysis was conducted to identify recurring codes, categories, and overarching themes. The analytical process followed several key steps: data familiarization, initial coding, theme development, refinement, and interpretation.

To enhance credibility and consistency, two researchers independently coded the data using MAXQDA 2022 software. Discrepancies in coding were discussed collaboratively until consensus was reached, and an inter-coder agreement of approximately 80% was achieved. This ensured methodological rigor and minimized subjective bias in the interpretation process. Following the coding and theme generation, the data were categorized and examined to explore relationships among emerging concepts. The researcher then synthesized the results, constructing explanatory narratives and identifying potential causal links between perceived brand attributes and the medical tourism experience.

This content analysis enabled a structured interpretation of participants' narratives, aligning with the study's aim of exploring how brand perception is shaped by the experiences of international health tourists in private hospitals in Istanbul.

1.4. Ethical Approval

Ethical approval for the conduct of this study was obtained from the Istinye University Social and Human Sciences Research Ethics Committee on 23 March 2023, decision number 36.

2. ANALYSIS

Table 1 displays the demographic characteristics of the participants. In this table, each participant is assigned a unique code for identification purposes. Among the participants, four are female, and seven are male. The majority of participants (seven individuals) hold a university degree, one participant has a high school diploma, and one holds a master's or doctoral degree. There are five married participants and six single participants. Most of the participants (seven individuals) are from Europe, with additional participants from Asia and the Middle East (two from each region). The highest income group includes six participants who earn 3,000 Euros or more. Additionally, five participants earn between 2,000 and 3,000 Euros, and only one participant has an income below 1,000 Euros. This table illustrates the target population of the study and the demographic distribution of the participants.

Table 1. Participant Characteristics

Participant Code	Gender	Education Level	Marital Status	Region	Monthly Income
P1	Male	University	Married	Europe	3,000 Euros or more
P2	Female	High School	Married	Europe	Less than 1,000 Euros
P3	Female	University	Single	Europe	3,000 Euros or more
P4	Female	High School	Single	Europe	2,000-3,000 Euros
P5	Male	University	Single	Europe	2,000-3,000 Euros
P6	Female	Masters/	Married	Europe	3,000 Euros or more
P7	Male	PhD	Single	Asia	2,000-3,000 Euros
P8	Female	University	Married	Europe	3,000 Euros or more
P9	Male	University	Single	Middle East	2,000-3,000 Euros
P10	Female	University	Married	Europe	2,000-3,000 Euros
P11	Male	University	Single	Middle East	3,000 Euros or more

Table 2 provides information on the types of health insurance used by participants, the types of healthcare services utilized, and their internet usage durations. According to the table, the majority of participants (six individuals) use national insurance. Four participants prefer private health insurance, and three participants make payments via mobile phone. Seven participants opted for cosmetic surgery services, while four chose other types of healthcare services (routine treatments). One participant utilizes dental services. The participants' internet usage times vary widely: the largest group (six individuals) uses the internet for five or more hours daily, four participants use it for 3–5 hours, and one participant uses it for 1–3 hours.

Table 2. Participant Characteristics

Participant Code	Health Service Financing	Type of Health Service	Internet Usage
P1	National Insurance	Other (Routine Treatments)	5 hours or more
P2	Private Health Insurance	Cosmetic Surgery	1-3 hours
P3	National Insurance	Cosmetic Surgery	3-5 hours
P4	National Insurance	Cosmetic Surgery	5 hours or more
P5	National Insurance	Other (Routine Treatments)	5 hours or more
P6	Private Health Insurance	Cosmetic Surgery	5 hours or more
P7	Mobile Payment	Other (Routine Treatments)	1-3 hours
P8	Private Health Insurance	Cosmetic Surgery	3-5 hours
P9	Mobile Payment	Other (Routine Treatments)	3-5 hours
P10	Private Health Insurance	Other (Routine Treatments)	3-5 hours
P11	Mobile Payment	Dental Services	5 hours or more

Table 3 shows the channels through which participants prefer hospitals and the frequency of use of these channels. According to the table, participants who choose hospitals based on recommendations from friends use this channel at varying frequencies, with ten participants frequently relying on it. Hospital preferences based on recommendations from healthcare professionals are also commonly observed, with five participants using this channel regularly. Participants who choose hospitals based on information from television generally use this channel frequently, with three participants frequently preferring TV information. Those who choose hospitals based on online news exhibit varying frequencies, from infrequent to very frequent use, with seven participants using this channel frequently. Participants selecting hospitals based on the institution's website also show varied usage frequencies, with nine participants frequently using this channel.

Participants who interact on Facebook may focus on specific categories, potentially engaging with content or groups related to these categories. Two participants interact with other categories, which may indicate interest in different topics or types of content. There is one participant involved in a specific category of interaction. Participants on Instagram show intense interactions in specific categories, likely involving activities such as sharing images or videos, stories, or visiting profiles. Four participants engage in interactions across different categories, while three are involved in other activities or interests.

Table 3. Participating Hospital Preferences

		1 (Very Rarely)	2 (Rarely)	3 (Neither Rarely nor Often)	4 (Frequently	5 (Very Often)
1.	Friends	P1 P3		P2, P4, P5, P6, P9, P10 P11	P8	P7
2.	Health Professionals	P3, P6 P7, P8 P11	P2 P9	P1, P4 P5		
3.	TV	P6, P7 P8	P1 P3	P4, P5 P9, P11	P2	
4.	Online News	P1		P5, P7 P10	P2, P4 P8, P9 P11	P3 P6
5.	Hospital Websites	P1, P6 P7	P11	P4, P8 P9	P2 P4	P5
6.	Facebook	K4		K3 K6	P2, P5 P9, P11	P1, P7 P8
7.	Instagram	P1	P3	P10 P11	P2, P4 P5, P9	P6, P7 P8
8.	YouTube	P7	P2, P3 P4, P5	P1 P11	P9	P6 P8
9.	Twitter	P2, P3 P4, P7	P5 P9	P8	P11	P1 P6
10.	LinkedIn	P3, P4 P7, P9	P2 P11	P5	P6 P8	P1

On YouTube, participants display a wide range of interactions, including watching videos, commenting, and liking, with all 11 participants engaging in various activities. One participant is involved in other specific interaction categories. On Twitter, all 11 participants engage in a variety of activities, such as tweeting, retweeting, and liking. Similarly, on LinkedIn, all 11 participants demonstrate a broad range of interactions related to professional networking and job-related content sharing. The data indicate that users have established a significant online presence by engaging with various topics across these platforms. Participants using social media platforms like Facebook, Instagram, YouTube, Twitter, and LinkedIn for hospital preferences exhibit varied frequencies of channel usage, with each platform showing distinct usage patterns.

The findings of this study are based solely on the views of 11 international health tourists and should be interpreted within the scope of a limited sample. Further studies with larger participant groups are needed to determine whether these selection criteria are applicable to different segments of health tourists. Moreover, additional research involving broader and more diverse samples would be beneficial to test whether the components that shape brand perception hold true across different contexts.

3. CONCLUSIONS

In the study by Düzcü (2019) involving domestic patients, it was found that they follow health-related information primarily through YouTube, healthcare professionals, and Twitter. In contrast, this study reveals that foreign patients more frequently use online news, Instagram, and Facebook to access health information. Both studies observed that participants use television less frequently to follow health-related information. In the study by Ince and Uygurtürk (2019), the primary consideration for domestic patients when choosing a hospital was noted to be the reputation of the doctor in their field. Similarly, Ayaz and Karaduman (2017) found that the branding of doctors significantly influences domestic patients when selecting a hospital. However, this study shows that foreign health tourists prioritize successful prior procedures as the main factor in choosing a hospital. Kavuncu and Yaman (2019) highlighted that domestic patients value receiving healthcare services from well-known institutions, whereas this study indicates that foreign tourists prioritize factors such as rapid results, affordable prices, and meeting expectations when choosing a private hospital.

Zor and Biçer (2020) found that consumers' preference to repeatedly choose a healthcare institution is influenced by elements that shape brand image, including service quality, customer satisfaction, and loyalty. In this study, factors influencing brand image for health tourists were identified as competent doctors, trust, recognition, positive reviews, and successful procedures. Yağar and Soysal (2017) observed that hospitals with established brands are trusted for the quality of their healthcare services and are less influenced by online ads, billboards, and social media reviews. Instead, these hospitals are more impacted by technology, lack of transportation issues, and doctor reputation. Similarly, this study shows that online news and social media significantly impact health tourists.

These insights enable private hospitals to refine their digital communication strategies and prioritize platforms most frequently used by international patients. Furthermore, identifying brand

image components from the health tourists' perspective contributes to theory-building by expanding our understanding of loyalty formation in cross-border healthcare settings.

Findings from studies on global health tourists reinforce these observations. For instance, Pan and Moreira (2018) observed that while Chinese health tourists prioritize access to advanced technology and highly regulated healthcare environments, high costs and perceived risks act as significant deterrents. Majeed et al. (2018) reported that Thai, Indian, and Chinese health tourists favor destinations that offer both medical services and sustainable tourism experiences. In addition, destinations rich in cultural and natural attractions have been found to play an important role in shaping expectations and influencing destination choices. Heydari et al. (2019) highlighted that service quality, staff behavior, and effective communication are among the most critical factors affecting satisfaction. Kim et al. (2016) emphasized that integrating healthcare services with enjoyable tourism experiences enhances the perceived benefit and satisfaction of health tourists. Building on this, Lee and Li (2019) proposed the development of a health tourism destination index based on specialized services, which could help countries optimize their strategies to attract international patients.

Theoretical and Practical Implications

- Among the reasons health tourists choose Turkey for medical tourism, the opportunity for a "vacation" is seen as a primary factor. By diversifying Turkey's vacation options—including seaside, winter, thermal resort, and cultural tourism—tourists can be further encouraged to visit the country. Hospitals in Istanbul, a hub of medical tourism, could establish collaborations with hotels and travel agencies along these vacation routes, offering patients the opportunity to combine their recovery process with a holiday.
- Health tourists have expressed a preference for private hospitals based on "Google Reviews," "social media," and "Renowned Doctors" during their research. This finding suggests that hospitals involved in medical tourism should utilize Google reviews and social media accounts more actively. Positive reviews and shares about successful doctors, in particular, will positively influence the hospitals' brand image and increase their attractiveness.
- Among concepts associated with private hospital branding, health tourists particularly emphasize "successful procedures," followed by "trust" in the hospital. Increasing the success rates of procedures performed and adopting an approach that conveys trust to

patients will positively influence brand perception. Hospitals that demonstrate transparency, especially concerning their successful procedures, and share numerical data will reinforce patient trust.

- According to health tourists, the requirements for a private hospital to become a recognized brand include being "part of a network" and having "positive reviews." It is essential to remember that positive reviews are the most significant factor in service marketing. Maintaining communication with health tourists, especially after the service has been provided, and assessing their satisfaction levels will positively impact brand perception. Hospitals should collect feedback from health tourists through various channels, such as evaluation forms and social media feedback, and make improvements based on this feedback.
- Health tourists report that factors negatively affecting brand perception of a private hospital include "unsuccessful procedures," "lack of hygiene," and "indifferent doctors." To prevent procedural failures, it is essential to improve the attentiveness of all healthcare professionals, especially doctors. Negative experiences related to doctors' communication and attentiveness also adversely impact brand perception. Providing specialized training for doctors on patient communication and satisfaction can contribute positively to the development of the institution's brand image.
- According to the study results, health tourists' brand perceptions of private hospitals are generally based on service quality. Therefore, hospitals should continuously strive to improve their service quality. This includes organizing training programs, enhancing technological infrastructure, and consistently working to improve the patient experience.
- Price perception is a significant factor influencing health tourists' choice of hospital. Hospitals should develop competitive pricing strategies and clearly communicate the value of the services they offer. Additionally, it is important to present pricing policies transparently and avoid hidden costs.
- To succeed in the medical tourism sector, it is crucial for hospitals to focus on specific target audiences. Based on the research findings, hospitals should identify which geographic regions or health issues to target and adjust their marketing strategies accordingly.

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Accessible Tourism: Alanya Example Effects of Disabled Tourists' Perceptions of the Destination on their Satisfaction, Revisit and Recommendation Intention [a]

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Abstract

Aim: The present study was aimed at determining the perspectives of tourists with disabilities visiting the destination of Alanya regarding concepts such as disabled tourist perception, customer satisfaction and revisit intention, and determinants of such concepts.

Method: The sample of this cross-sectional study consists of disabled tourists staying in 4 and 5 star hotels in Alanya district of Antalya in 2023. The data were collected through face-to-face interviews

[a] This study was derived from Pınar Karakuş's PhD thesis titled "Accessible Tourism: The Case of Alanya, The Effect of Destination Perceptions of Disabled Tourists on Satisfaction, Revisit and Recommendation Intentions

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between January 1 and August 31, 2023 using the "drop-and-collect" method. Data collection tools: Personal Information Form, Disabled Tourist Perception Scale, Customer Satisfaction Scale and Revisit & Recommendation Intention Scale. Descriptive statistics, Pearson correlation and multiple regression methods were used in the analysis.

Results: Of the participants, 56.2% were men and 35.1% were in the age group of 60-69 years. In the study, it was determined that customer satisfaction was negatively affected by education level and smoking, and positively affected by the perceptions of tourists with disabilities ($p<0.05$), and that revisit and recommendation intentions were negatively affected by education level, social class, smoking, and positively affected by the perceptions of tourists with disabilities ($p<0.05$). It was also determined that there was a strong positive relationship between "revisit and recommendation intentions", and "customer satisfaction and perceptions of tourists with disabilities".

Conclusion: The study found that a positive increase in the perceptions of disabled tourists increases customer satisfaction and revisit intention. It was also found that socioeconomic level affects customer satisfaction and revisit intention; satisfaction and intention of individuals with higher socioeconomic level were lower than the others.

Keywords: Accessible tourism, disability, satisfaction, revisit, recommendation

INTRODUCTION

According to the World Health Organization, health means not only the absence of disease and disability but also a state of complete physical, mental and social well-being. Disability is the inability of an individual to perform normal life functions due to permanent loss of function, or organ dysfunction in performing his or her physical, mental or emotional activities (WHO, 2023). In the Declaration on the Rights of Persons with Disabilities adopted by the United Nations General Assembly, individuals with disabilities are defined as individuals who are unable to perform personal or social tasks required in daily life due to congenital or acquired deficiencies in their physical or mental abilities (Burnett & Baker, 2001).

Accessible tourism is a type of tourism designed to ensure that individuals with physical disabilities, those with hearing or visual impairments, and even those with special needs can participate in touristic activities equally and independently (Toker & Kaçmaz, 2015). Accessible tourism refers to the process of having no barriers which prevent individuals from having a thorough tourist experience. This type of tourism requires strategic cooperation between interested parties. A range of interested parties, including tourist destinations, accommodation businesses,

transportation providers, tour operators, local governments, non-governmental organizations, and individuals with disabilities, should come together to support and promote accessible tourism (Akıncı et al., 2021; Şen et al., 2014).

The ratio of individuals with disabilities to other people in the total population in the world has increased significantly. People with disabilities experience many problems in their social lives and thus they want to isolate themselves from such life. Therefore, appropriate arrangements should be made for individuals with disabilities so that they do not have difficulties in their daily lives. Such arrangements should also be made in tourism activities. Tourism is a social activity that meets people's needs for vacation, rest, discovery and being acquainted with different cultures (Bayih& Singh, 2020).

The tourism sector has the obligation to provide a service from which everyone can benefit equally; thus, it is important to provide accessible services for individuals with disability participate in tourism activities (Öktem &Akdu, 2022; Wang et al., 2021). In order for individuals with disability participate in tourism activities actively, their needs must be met. If barriers that prevent individuals with disabilities from participating in tourism activities are eliminated or minimized, they will be able to participate in tourism activities more (Akdu&Akdu, 2018). Minimizing of such barriers will also make them happier. Having had a happy experience will encourage individuals with disabilities to revisit the destinations they have visited and to recommend others to visit these destinations. In addition, individuals with disabilities constitute an important potential market in travel and tourism when their needs are met. Thus, accessible tourism has recently become popular in the tourism sector with names such as inclusive tourism, accessible tourism, disabled-friendly tourism and tourism for everyone (Bulgan & Çarıkçı, 2016; Toker & Kaçmaz, 2015). In Turkey, Alanya is one of the leading destinations where tourism activities are carried out (Bayih& Singh, 2020; Toker & Kaçmaz, 2015). Alanya has come to the forefront by making significant investments in tourism activities, especially for individuals with disabilities, since the early 2000s. In 2003, Alanya Municipality started working on the “Alanya for All (Tourism for all)” project so that individuals with disabilities residing in Alanya or coming to Alanya for tourism activities can participate in tourism activities. With this project, it was aimed to make the necessary arrangements to facilitate the lives of not only individuals with disabilities but also children, older adults and pregnant women, and to increase the accessibility of individuals

with disabilities by identifying and eliminating existing deficiencies (Tourismforall, 2020). In order to implement this project, which was started in 2003 to change the infrastructure and to carry out international marketing and promotion activities, Alanya Municipality signed the "Accessible Tourism City Alanya" protocol on December 02, 2011 with the participation of the Ministry of Culture and Tourism of the Republic of Turkey, the Ministry of Family and Social Policies-General Directorate of Services for the Disabled and the Elderly, Alanya Tourism Operators Association and Alanya Chamber of Commerce and Industry. In addition to these efforts, Alanya became the first member of European Network for Accessible Tourism (ENAT) in Turkey, which carries out activities on accessibility for people with disabilities supported by the European Commission (ENAT, 2007). Thus, Alanya municipality aims to make Alanya a preferred tourism destination not only for individuals without disabilities but alsofor people with disabilities. Considering these factors, in the present study the immediate aim was to determine the perspectives of tourists with disability visiting Alanya regarding concepts such as disabled tourist perception, customer satisfaction and revisit intention, and determinants of such concepts. The distant aim was to provide resources for the policies and literature to be developed within the scope of accessible tourism in Alanya district.

1. RESEARCH METHODOLOGY

1.1. Population and Sample of the Study

The population of the research consisted of tourists with disabilities who visited Alanya district at least once and stayed in 4- and 5-star hotels (97 4-star hotels and 85 5-star hotels). However, since it was not possible to reach the whole population, it was aimed to reach at least 300 participants (Hair et al., 2010; Tabachnick &Fidell, 2013). The number of the people reached was 396.

1.2. Data Collection Tools

The following four forms were used to collect the study data: Personal Information Form, Disabled Tourist Perception Scale, Customer Satisfaction Scale, and Revisit and Recommendation Intention Scale. Data collection was conducted through face-to-face interviews using the drop-and-collect method. The interviewers spoke to the interviewees in Turkish or English.

Personal Information Form: The 23-itemform was created by the researchers to determine the socio-demographic characteristics of the participating tourists with disabilities.

Disabled Tourist Perception Scale: The scale was obtained from the study titled "Disabled individuals' perceptions of accommodation business-oriented tourism and suggestions regarding the disabled tourism market: The example of Antalya province" conducted by Öndül (2015). The scale consists of the following sub-dimensions: perception of travel agency service, perception of suitability of accommodation enterprises, perception of suitability of regions, and expectations and recommendations. The scale consists of 30 items whose responses are rated on a five-point Likert type scale ranging from 1 (strongly disagree) to 5(strongly agree). No items are reverse scored. The higher the score obtained from an item is, the higher the level of the perceptions of tourists with disabilitiesabout that item is. The Cronbach's alpha value of the scale was 0.896 in Öndül's study (2015) and 0.966 in the present study.

Customer Satisfaction Scale: The scale developed by Han and Ryu (2009) to measure customer satisfaction consists of three items whose responses are rated on a five-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree) and one dimension. No items are reverse scored. High scores indicate that the level of customer satisfaction is high (Han &Ryu, 2009; Keskin et al., 2020). In the present study, the Cronbach's alpha value of the scale was 0.916.

Revisit and Recommendation Intention Scale: The scale adapted to the present study based on the scale developed by Artuğer (2015) to measure revisit intention and the scale developed by Hosany et al. (2015) to measure recommendation intention consists of five items whose responses are rated on a five-point Likert type scale from 1 (strongly disagree) to 5 (strongly agree).No items are reverse scored. High scale scores indicate that the person'slevel of intention to revisit and to recommend is high (Artuğer, 2015; Hosany et al., 2015). In the present study, the Cronbach's alpha value of the scale was 0.967.

1.3. Data Analysis

The data collected from the study was analyzed using the SPSS(Statistical Package for Social Science) 25 program. In the first step of the analysis, the normality test was performed. The skewness and kurtosis values of the scales used in the study were determined. The skewness and kurtosis values ranging between -1.5 and +1.5 indicate normal distribution (Tabachnick &Fidell, 2013). In the analysis, the skewness and kurtosis values were between -1.5 and +1.5 and it was assumed that the data were normally distributed. Therefore, percentage, frequency, arithmetic mean, correlation and multiple regression analysis were used in the analysis of the data.

1.4. Ethical Approval

Ethical approval for the study was obtained from the Scientific Research and Publication Ethics Committee of the Health Sciences Department at Alanya Alaaddin Keykubat University on 22 December 2022, decision number 04.

2. ANALYSIS

Of the participants, 56.2% were men, 35.1% were in the age group of 60-69 years, 35.9% were high school graduates, 55.9% had nuclear families, 39.7% had an income more than their expenses, 55.4% had children, and 42.3% had orthopedic disabilities (Table 1).

Table 1. Socio-demographic characteristics of the participants (n: 390)

Variables	N	%
Sex		
Men	219	56.2
Women	171	43.8
Age (years)		
20-29	2	0.5
30-39	34	8.7
40-49	81	20.8
50-59	82	21.0
60-69	137	35.1
≥70	54	13.8
Marital status		
Married	220	56.4
Single	170	43.6
Education		
Primary school	89	22.8
High school	140	35.9
Associate degree	59	15.1
Bachelor's degree	86	22.1
Master’s degree	16	4.1
Family type		
Extended family	87	22.3
Nuclear family	218	55.9

Single parent family	85	21.8
Socialstatus		
High social status	212	54.4
Low social status	178	45.6
Income status		
Income equal to expenses	87	22.3
Income more than expenses	155	39.7
Income less than expenses	148	37.9
Having children		
Yes	216	55.4
No	174	44.6
Type of disability		
Orthopedic	165	42.3
Hearing	41	10.5
Speaking	56	14.4
Chronic disease	128	32.8
Smoking status		
Smoker	156	40.0
Non-snooker	166	42.6
Ex-smoker	68	17.4
Alcohol use		
Never	261	66.9
Occasionally	97	24.9
Once or a few times a month	15	3.8
Once or a few times a week	9	2.3
Every day	8	2.1
TOTAL	390	100

Of the participants, 65.9% came to Alanya in their own vehicles, 29.7% preferred Alanya because of accessibility (cost, distance, time), 34.6% preferred it because of activities (social activities, recreational activities etc.), 25.6% preferred it because of attractions (cultural, natural), 10% preferred it because of tourism establishments (hotel, travel agency), 92.1% intended to recommend the tourism service they received to others and 98.5% would like to revisit Alanya to receive tourism service. The countries where the participants came from were Turkey (61.8%),

England (14.1%), Russia (4.4%), Finland (3.8%), France (3.6%) and other countries (12.3%) (Table 2).

Table 2. Participants' tourism experience-related characteristics

	n	%
Mode of transport		
Own vehicle	257	65.9
Via ravel agency	88	22.6
Via tourism service broker	45	11.5
What factors affected your choice of Alanya?		
Accessibility (Cost, distance., time)	116	29.7
Activities (social activities, recreation etc.)	135	34.6
Attractions (cultural, natural)	100	25.6
Tourism enterprises (hotels, travel agencies)	39	10.0
Would you recommend the healthcare services you received here to others?		
Yes	359	92.1
No	31	7.9
Have you been to Turkey before?		
Yes	378	96.9
No	12	3.1
Would you visit Turkey again?		
Yes	384	985
No	6	1.5
Have you been to Alanya before?		
Anxiety	319	81.8
Depression	71	18.2
Have you experienced any negativity in Alanya?		
Yes	36	9.2
No	354	90.8
If so, what is the negativity you experienced?		
Bathrooms are small	2	5.5
Lack of path for people with disabilities	6	16.6
Lack of facilities for people with disabilities (no access to the sea, and beach, Insufficient means of transportation in the center, Environment)	19	52.7
Inappropriate sidewalks	7	19.7

Meals	2	5.5
Who do you stay with on your holiday?		
Alone	41	10.5
Family	286	73.3
Friend	63	16.2
How would you describe your holiday experience?		
I had a new experience.	62	15.9
I really enjoyed it.	151	38.7
It was exciting.	119	30.5
It was different from my previous experiences.	38	9.7
It was terrible.	20	5.1
What country do you come from?		
Turkey	241	61.8
England	55	14.1
Russia	17	4.4
Finland	15	3.8
France	14	3.6
Others	48	12.3
What is your nationality?		
Turkish	275	70.5
British	55	14.1
German	12	3.1
Ukrainian	10	2.6
Finn	5	1.3
Others	33	8.4

According to the results of the analysis, the mean scores the participants obtained from the scales were as follow: Disabled Tourist Perception Scale($\bar{x}$= 3.31), Customer Satisfaction Scale($\bar{x}$= 3.34) and Revisit and Recommendation Intention Scale($\bar{x}$= 3.87). According to the results of the correlation analysis, there was a high-level positive relationship between the Disabled Tourist Perception Scale and Customer Satisfaction Scale, a high-level positive relationship between the Disabled Tourist Perception Scale and Revisit and Recommendation Intention Scale and a high-level positive relationship between the Customer Satisfaction Scale and Revisit, and Revisit and Recommendation Intention Scale($p<0.01$) (Table 3).

Table 3. Mean scores the participants obtained from the scales, and the results of correlation analysis

Scales	Min-Max	$\bar{X}$	*SD*	1	2	3
1. Disabled Tourist Perception Scale	1.-5	3.31	0.72	1	0.734 0.000*	0.762 0.000*
2. Customer Satisfaction Scale	1.-5	3.74	0.95		1	0.885 0.000*
3. Revisit and Recommendation Intention Scale	1.-5	3.87	1.16			1

Factors affecting customer satisfaction were examined with the multiple regression model. The results of the analysis demonstrated that the regression model was statistically significant ($F(12,378) = 40.367$, $p < 0.001$), and the independent variables explained 54% of the change in the customer satisfaction scale. According to the results of this analysis, customer satisfaction was explained by education status, smoking and disabled tourist perception, while other variables did not have a significant contribution to customer satisfaction (Table 4).

Table 4. Multiple regression analysis for the customer satisfaction and factors affecting the customer satisfaction

Variables	B	SE	β	T	p
Constant	1.743	0.980		1.780	0.000
Sex	0.011	0.066	0.006	0.167	0.867
Age	-0.255	0.461	-0.019	-0.553	0.580
Marital Status	0.110	0.103	0.057	1.059	0.290
Educational Status	-0.259	0.092	-0.115	-2.823	**0.005**
Family Type	-0.041	0.061	-0.029	-0.675	0.500
Social Class	-0.074	0.070	-0.039	-1.056	0.292
Income Status	-0.046	0.044	-0.037	-1.036	0.301
Having Children	-0.006	0.105	-0.003	-0.059	0.953
Smoking	-0.133	0.048	-0.101	-2.757	**0.006**
Alcohol Use	0.071	0.064	0.039	1.106	0.269
Disability Type	-0.006	0.015	-0.014	-0.404	0.686
Disabled Tourist Perception	0.984	0.048	0.742	20.696	**0.000**
Adjusted R^2=0.543	F=40.367			p=0.000	
Dependent Variable: Customer Satisfaction					

Variables included in the model: Sex (ref: Male), Age (ref: 31 years and above), Education level (ref: primary school and above), Family type (ref: extended family), Income level (ref: income more than expenses), Disability type (ref: Hearing impairment), Marital status (ref: Married), Alcohol status (ref: Rarely/once a week/once a month), Smoking (ref: Yes)

The factors affecting Revisit and Recommendation Intention were examined with the multiple regression analysis. According to the results of the analysis, the regression model was statistically significant (F (12,378) = 50.041, p<0.001), and the independent variables explained 60% of the variance in the Revisit and Recommendation Intention Scale. According to the results of this analysis Revisit and Recommendation Intentions were explained by social class, smoking and disabled tourist perception, while other variables did not have a significant contribution to Revisit and Recommendation Intentions (Table 5).

Table 5. Multiple regression analysis for Revisit and Recommendation Intention, and factors influencing Revisit and Recommendation Intention

Variables	B	SE	β	t	p
Constant	0.434	1.126		0.385	0.001
Sex	0.011	0.076	0.005	0.142	0.887
Age	0.357	0.529	0.022	0.675	0.500
Marital Status	0.052	0.119	0.022	0.437	0.662
Educational Status	-0.204	0.105	-0.074	-1.935	0.064
Family Type	-0.084	0.070	-0.048	-1.202	0.230
Social Class	-0.166	0.080	-0.071	-2.077	**0.039**
Income Status	-0.093	0.051	-0.061	-1.828	0.068
Having Children	-0.144	0.120	-0.062	-1.194	0.233
Smoking	-0.123	0.055	-0.077	-2.224	**0.027**
Alcohol Use	-0.017	0.074	-0.008	-0.233	0.816
Disability Type	0.003	0.017	0.005	0.164	0.870
Disabled Tourist Perception	1.225	0.055	0.754	22.425	**0.000**
Adjusted R^2=0.602	F=50.041	p=0.000			
Dependent Variable: Revisit and Recommendation Intention					

Variables included in the model: Sex (ref: Male), Age (ref: 31 years and above), Education level (ref: above primary school), Family type (ref: extended family), Income level (ref: income more than expenses), Disability type (ref: Hearing impairment), Marital status (ref: Married), Alcohol use (ref: Rarely/once a week/once a month), Smoking (ref: Yes)

3. DISCUSSION

The concept of "Tourism for All", which emerged in 2003, represents an approach that evaluates tourism as a sector not limited to commercial concerns, and emphasizes that tourism should be accessible to all segments of society. The main target audience of this approach includes different groups such as young people, families, older people and people with disabilities. The aim is to

make tourism more accessible not only to a certain segment but also to the whole society. However, it is not possible to say that the regulations and practices in this area in Turkey are adequate yet. More effort and investment may be required to encourage a greater number of people with disabilities to participate in tourism activities. More efforts may be required in areas such as improving accessibility standards, offering special tourism packages to people with disabilities and creating more awareness to facilitate the travel experiences of individuals with disabilities.

In the present study, of the tourists with disabilities visiting Alanya, 56.2% were men, 43.8% were women and 56.4% were married. In Öndül's study titled"Disabled individuals' perceptions of accommodation business-oriented tourism and suggestions regarding the disabled tourism market: The example of Antalya province" (2015), of the participants 66.1% were menand 33.9% were women (Öndül, 2015). In Toker and Kaçmaz's study conducted in Alanya (2015), of the participating tourists withdisabilities, 43.8% were women, 56.2% were men and 59.3% were married (Toker & Kaçmaz, 2015).

Of the participants in the present study, 42.3% had orthopedic disabilities. In a study conducted by Öndül (2015) titled "Disabled individuals' perceptions of accommodation business-oriented tourism and suggestions regarding the disabled tourism market: The example of Antalya province",of the participants,63.3% were physically disabled (Öndül, 2015). In Toker and Kaçmaz's study titled "A Research on Tourism Experiences of Individuals with Disabilities: Alanya Example" (2015), 60.8% of the participants had physical disabilities (Toker & Kaçmaz, 2015). The results of the present study are consistent with those of the aforementioned studies.

In the present study, the countries where the participants came from were Turkey (61.8%), England (14.1%), Russia (4.4%), Finland (3.8%), France (3.6%) and other countries (12.3%). As for the nationality of the participants, 70.5% were Turkish, 14.1% were British, 3.1% Germans, 2.6% were Ukrainians, 1.3% were Finns and 8.4% were from other countries. In Bulgan and Çarıkçı's study (2016), the majority of the participants were in the middle age group and most of them were German, Russian and Turkish (Bulgan & Çarıkçı, 2016). In Toker and Kaçmaz's study titled "A Research on Tourism Experiences of Individuals with Disabilities: Alanya Example" (2015), the participants were from Germany, Norway and Russia (Toker & Kaçmaz, 2015). The results of the present study are consistent with those of the aforementioned studies. These results indicate that Alanya hosts visitors with disabilities from various countries and that there is diversity

among these visitors in terms of variables such as sex, marital status, type of disability, country and nationality. Such data can provide significant information for destination managers and tourism enterprises in planning and developing services for tourists with disabilities.

According to the results of the regression analysis conducted in the present study, the participants' satisfaction with tourism was affected by variables such as educational status, smoking and disabled tourist perception whereas their revisit and recommendation intention was affected by variables such as social class, smoking and disabled tourist perception. According to the results of the correlation analysis, there was a relationship between disabled tourist perception, tourist satisfaction, and revisit and recommendation intention. In Keskin et al.'s study (2020), a positive relationship was determined between satisfaction, revisit and recommendation intention, and revisit and recommendation intentions were affected by satisfaction (Keskin et al., 2020). In Mancı's study (2022), customer satisfaction positively affected the participants' revisit and recommendation intentions (Mancı, 2022). In Öktem and Akdu's study (2022), customer satisfaction positively affected revisit and recommendation intensions (Öktem &Akdu, 2022). In several studies conducted in the international literature, a positive relationship was determined between tourist satisfaction, and revisit and recommendation intentions; in other words, tourist satisfaction affected revisit and recommendation intentions (Kanwel et al., 2019; Marques et al., 2021; Shi et al., 2022; Zeng et al., 2021). The results of the present study are consistent with those of the aforementioned studies. Studies in the literature indicate that destination image is the most important factor affecting tourist satisfaction and revisit intention (Afshardoost & Eshaghi, 2020; Jeong& Kim, 2019; Lam et al., 2020; Saçlı et al., 2019; Türkeri & Akyürek, 2021; Uner et al., 2023; Wang et al., 2021). According to this result, destinations aimed at being a destination for disabled tourism and adopt the "Tourism for All" approach should make their new destinations suitable for tourists with disabilities in order to attract them.

The perception that a destination is disabled-friendly can affect tourists' intentions to visit that destination. Tourists with disabilities want to feel comfortable and safe in the places they travel to. Accessibility means that facilities and services are easily accessible for individuals with disabilities. When tourists with disabilities have positive holiday experiences, their intention to revisit increases and they are more likely to recommend the destination. Therefore, destinations

should make efforts to improve the perceptions of tourists with disabilities and raise their accessibility standards (Devile & Kastenholz, 2020; Lim, 2020; Załuska et al., 2022).

4. CONCLUSIONS

A destination's image can be built through promotion and communication. When a destination promotes its accessibility and services for tourists with disabilities, and communicates with them, it can build a positive image. To be knowledgeable about reputation of a destination from the perspective of customers, tourists with disabilities mostly review previous visitors' view sand feedback. Customers' positive views about a destination and the good reputation of the destination can gain the trust of tourists with disabilities.

A significant result of the study is that as the perceptions of tourists with disabilities improve, and that their customer satisfaction and revisit intention increase. Another significant result is that socioeconomic level is a determinant of customer satisfaction, and revisit and recommendation intentions, and those with better socioeconomic levels have worse customer satisfaction and revisit and recommendation intentions than do others.

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Factors Shaping Health Tourism Income in Türkiye: A Time Series Study on the Effects of Innovation, Safety and Hygiene

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Abstract

Aim: The aim of this study is to examine the effects of global innovation index, safety and security level and health and hygiene level on health tourism income.

Methods: Time series analysis was applied with Türkiye's data for the years 2012-2023. After the stationarity of the series was analyzed with Philips-Perron (PP) unit root tests, short-term and long-term relationship was examined with Johanson Cointegration test. Then, shocks occurring in the short term were calculated by applying Error Correction Model and Impulse-Response Function.

Results: While hygiene and health level (HH) positively affected health tourism income (EXP) ($P<0.05$), global innovation index affected it in a non-significant positive way ($p>0.05$). EXP variable is affected by shocks from GII, HH and SS. Therefore, health tourism income is

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significantly affected by indicators such as safety and security, innovative developments in tourism, hygiene and health level in the short term.

Conclusion: As a result, it is recommended that Türkiye should make continuous efforts towards innovation, hygiene and security elements in order to realize its health tourism potential. The meticulous handling of these elements by stakeholders will strengthen the country's position in the field of health tourism and increase its health tourism income by ensuring that it assumes a more competitive role in the international market.

Keywords: Hygiene, health tourism income, innovation, security, time series analysis, Türkiye

INTRODUCTION

As a result of the desire to meet health services abroad due to reasons such as long waiting times, high costs and access barriers, health tourism mobility has become a rapidly growing and remarkable sector at the global level (Connell 2006). Türkiye is also among the destinations preferred by citizens of developed countries as a health tourism destination. Because Türkiye is a destination that has attracted the attention of health tourists by offering relatively low-cost and high-quality health services in a shorter time (Çapar 2018; Özer and Sonğur 2013; Sosysal 2017). Türkiye can also be expressed as an important actor that can meet the demand for health tourism worldwide by combining health services with classical tourism types such as cultural, historical, sea, sand and sun. Türkiye highlights its role in health tourism with the marketing strategies of the International Health Services Corporation (USHAŞ) for health tourism destinations, which work in coordination under the leadership of the Ministry of Health, and the inspection, control and quality studies of the Presidency of Health Tourism based on health tourism legislation. Because it is extremely important for these institutions and organizations to come together as stakeholders. In fact, the studies conducted have shown that these stakeholders should work in a coordinated manner (Çapar and İnan 2024). It is thought that Türkiye's health tourism income will increase when relevant stakeholders work together to determine strategies and policies.

There are many factors that determine the choice of health tourism destination and affect health tourism income. The most important of these factors are the quality health services, hygiene level, low prices, low waiting times, security level (Çapar and Aslan 2020) and technological innovation (Panasiuk 2018). Most of these factors have been analyzed in various scientific studies together or separately in models regarding the effects of destination selection (Çapar 2018; Çapar

and Aslan 2020; Jovanović et al. 2015; Konak 2022; Kumar et al. 2016; Mataković and Mataković 2019; Panasiuk 2018; Sultana et al. 2014). Among these studies, the master's thesis conducted by Çapar (2018) in Türkiye and another study conducted by Çapar and Aslan (2020) addressed the level of security and hygiene, and it was reported that these two variables were important variables in destination selection. Similarly, a study conducted in Malaysia also stated that the relevant factors are important in destination selection (Kumar et al. 2016). In addition to these studies, Mataković and Mataković (2019) revealed that security is an important factor for health tourism, and Jovanović et al. (2015) and Konak (2022) revealed that hygiene is an important factor for health tourism.

The effect of innovation, one of the important factors of the current study, on health tourism was examined by Panasiuk (2018). In this study, it was revealed that the innovation variable is effective in health tourism destination selection and therefore has the potential to positively affect health tourism income. Innovation and technology affect the destination choice of health tourists. This situation shows that innovation can indirectly affect health tourism income. Therefore, unlike the other two variables in the model of the study, safety and hygiene, innovation is remarkable in terms of having an indirect effect. In fact, the findings reported in a study conducted by Godovykh et al. (2022) support this situation. In addition, in a study conducted by Vellas (2011), the indirect effects of the tourism economy are mentioned. In a study conducted by Szymanska and Panfiluk (2019), it was reported that innovations and technologies in health tourism positively affect the preferability of health tourism and therefore health tourism income. As can be understood from these studies, innovation and innovation in health tourism indirectly affect health tourism income and this effect, unlike the level of safety and hygiene, can reveal unconsidered factors of health tourism income.

Considering the information from the above studies, it can be stated that security, hygiene and innovation affect health tourism destination selection and therefore health tourism income. Despite this effect, it is seen that a model in which the relevant variables work together is not reflected in the literature. This situation shows the necessity of the potential of these variables to affect health tourism together in the same model in the literature. This current study, unlike the studies given above, attempts to reveal the variables of safety, hygiene and innovation in the same model using the time series analysis method, which is a method that will take into account long-term results. This situation constitutes the motivation for the current study. Because it is thought

that the empirical results to be obtained from this study will fill this gap in the literature and provide evidence to the relevant health tourism stakeholders. In this way, it will be understood that safety, hygiene and innovation are important determinants of health tourism income and evidence will be provided for strategies to increase the income of health tourism. Innovative approaches in health services and developments in medical technology enable countries to gain competitive advantage in the health tourism market. The existence of applications requiring innovation, such as innovative medical technologies, is a situation that can be revealed by the global innovation index. For this reason, the global innovation index is a critical factor affecting health tourism income (Ryndach et al. 2024). Because the developments and innovations in health technologies that countries have can increase the quality of service and directly affect the preferences of health tourists, thus encouraging growth in the health tourism economy (Ateş and Sunar 2024). Because telemedicine applications and remote patient or result monitoring systems used in the field of health tourism in recent years contribute to the development of the health tourism sector by eliminating the barriers to accessing health services.

In the post-pandemic period, the increased trust in hygiene standards shapes patients' preferences and makes it mandatory for countries to pay attention to hygienic conditions while providing health services (Chen and Wilson 2013; Konak 2022). For this reason, the hygiene level of countries is an important factor that is expected to positively affect the choice of health tourism destination and, accordingly, health tourism income. Hygiene is perceived as an indicator that determines the quality of health services and is therefore an important criterion that patients take into consideration when choosing health tourism destinations (Lee et al. 2020; Alkier et al. 2022). It is thought that countries that increase their hygiene standards will have the potential to attract more tourists by gaining the trust of international patients, which will increase the country's health tourism income. Another important factor that is thought to affect health tourism income is the country's safety and security level. The country's score regarding safety and security is an indispensable criterion for the sustainability of health tourism. Health tourists' feeling safe in their preferred health tourism destinations increases their trust in the country and positively affects their receipt of health services (Mataković and Mataković 2019; Santana Gallego et al. 2019; Akamavi et al. 2023). Health services provided in a safe environment increase the psychological and physical comfort of patients and positively affect health tourism revenues (Sultana et al. 2014; Çapar and Aslan 2020). Security plays a critical role not only in the physical sense but also in

terms of reliability in the provision of health services. Therefore, it can be stated that health tourism destinations should develop strategies focused on security. This study aims to reveal how much, in what direction and in what way the factors of security, hygiene and innovation, which are thought to affect health tourism revenue, affect Türkiye's health tourism revenue. In this way, it is aimed to take these factors into consideration in order to increase Türkiye's health tourism potential and to develop strategic suggestions for the future of health tourism by demonstrating with evidence whether these factors have a critical importance in achieving long-term sustainable growth.

1. RESEARCH METHODOLOGY

The method of the study, data sources, data format, the abbreviation of the data passed to the model and the information about what it means, and the assumptions of the model are detailed below under subheadings.

1.1. Type and Model of the Study

The type of this study is longitudinal research. The analysis method of the study is time series analysis. The model of this study was determined as a relational screening model, which is one of the causal comparison subtypes of the quantitative research method.

1.2. Variables and Data Sources of the Study

In this study, health tourism income was included in the model as a dependent variable, safety and security, global innovation index, hygiene and health level as independent variables. In the study, Türkiye's data on the relevant variables between the years 2012-2023 were examined. Abbreviations, explanations and data sources regarding the variables of the study are given in Table 1.

Table 1. Study variables, abbreviations, values and sources

Dependent variable	Description	Abbreviation	Lowest-highest value and unit	Source
Health tourism income	Annual average health tourism revenue per health tourist	EXP	Varies according to the number of health tourists and the year. As the amount increases, the income increases. Unit is US dollars.	TUIK
Independent variable				
Safety and security level	An index that reveals the cost of widespread crime and violence, as well as terrorism, and the extent to which police services can be relied upon to provide protection from crime.	SS	Lowest score=0, highest score=7.	World Economic Forum
Health and hygiene level	An index that determines a country's health and hygiene level according to some parameters.	HH	Lowest score=0, highest score=7.	World Economic Forum
Global innovation index	An index that evaluates a country's inputs and outputs related to innovation and innovation.	GII	Lowest score=0, highest score=100.	World Intellectual Property Organization (WIPO)

Source: (World Economic Forum 2021; The World Intellectual Property Organization (WIPO) 2024; Turkish Statistical Institute (TUIK) 2024).

1.3. Data Analysis of the Study

First of all, the stationarity of the series was analyzed with the Philips-Perron (PP) unit root test in the study. Since the series were stationary at level I (1), appropriate lag lengths were determined. Then, the short-term or long-term relationship was examined with the Johanson Cointegration test. As a result of proving a long-term relationship, shocks occurring in the short term were calculated by applying the Error Correction Model and Impulse-Response Function.

The stationarity of the series included in the analysis in the study is of great importance for Time Series Analysis estimation methods. If the analysis is continued with non-stationary series, it causes spurious regression (Onafowora and Owoye 2015). This situation shows that the results obtained from the study are not reliable (Baumöhl and Lyócsa 2009). In order for a series to become stationary, the difference process is applied. As a result of this process, the variable d. If it becomes stationary after taking the difference of times, it is decided that it is a stationary series of degree (d) (Karanfil and Kılıç 2015).

1.4. Unit Root Tests

Philips-Perron (PP) Unit Root tests were applied to determine the stationarity of the variables considered in the study. The Philips-Perron (PP) Unit Root Test, developed by (Perron 1989), is a preferred test to test whether any series contains a unit root. According to the Philips-Perron unit root test, if the calculated statistical values are greater than the value specified in the confidence interval in absolute value, it indicates that the basic hypothesis is not accepted, that is, the H0 hypothesis is rejected. In this case, it indicates that the series does not contain a unit root and has become stationary (Perron 1989). The Philip-Perron unit root test was preferred because it makes more robust and strong estimates than the ADF test, taking into account the autocorrelation and heteroscedasticity problem (Afriyie et al. 2020). If the H0 hypothesis is accepted as a result of this test, it is stated that the variables do not contain a unit root and have become stationary (Heymans et al. 2014). If these variables become stationary at the same level, the short-term and long-term relationship is examined with the Johanson Cointegration Test. If the test statistics calculated here are greater than the value specified in the confidence interval in absolute value, the basic hypothesis explaining that there is no cointegration is rejected. This situation explains the existence of a long-term equilibrium relationship (Yavuz and Zhalelkanova 2018).

1.5. Johansen Cointegration Analysis

In the first stage of the research, after examining the stationarity of the series, appropriate lag lengths are calculated. In the second stage, the Johansen Cointegration Test was applied to examine a short- or long-term equilibrium relationship between series with linear combinations (Ivascu et al. 2021). The Johansen Cointegration Test provides information about the short- or long-term relationship by taking into account statistical criteria such as trace and eigenvalue (Khan et al. 2023). In this regard, if the calculated trace and eigenvalues are greater than the critical value in

absolute value, it means that the basic hypothesis is rejected. This situation supports a long-term cointegration relationship in the series (Solanki et al. 2020).

1.6. Error Correction Model and Impulse Response Function Analysis

If there is a long-term relationship as a result of the cointegration analysis, the Vector Error Correction Model is applied to detect the dynamics occurring in the short term (Albayrak 2021). After this model, the effect of shocks between variables is determined by the impulse response function. The impulse response function is an estimator method that describes the time-based effects of shocks occurring in the short term among variables over a certain time interval (Barratt et al. 2019).

2. ANALYSIS

The model includes four variables, one dependent and three independent, and 12 observations. According to the descriptive information regarding these variables, the average health tourism income or expenditure (EXP) per health tourist is approximately 2188±587 dollars. High values indicate high health tourist income. The average health and hygiene level (HH) is approximately 5±0.3 points. The HH variable varies between 0 and 7. High HH scores indicate a high level of hygiene. The average safety and security (SS) is approximately 4±0.38 points. The safety and security (SS) variable is also a variable that varies between 0 and 7 and indicates a higher level of safety and security as it increases. The global innovation index (GII) also indicates the existence of a low global innovation index with an average of approximately 37±1.59 points. Because this index reflects a situation where values range from 0 to 100 and high values are good.

Table 2. Tests for Autocorrelation and Heteroskedasticity in Regression Model

Breusch-Pagan/Cook-Weisberg Test	Chi2 (1) = 2.99 Prob>chi2 = 0.0436
Durbin-Watson Test	(5, 12) = 2.42979

Based on the Table 2, hypothesis H0 is rejected (P<0.05). Hence, the problem of heteroskedasticity is determined. This implies that the variance of the error term changes in the model. The Durbin-Watson test is greater than 2 in the model, meaning that there is negative autocorrelation (2<2.42979).

Table 3. Philips-Perron (PP) Unit Root Test

PP Test	Trended			Trendless		
Variables	Test Statistics	Significance Level (5%)	Significance Level (10%)	Test Statistics	Significance Level (5%)	Significance Level (10%)
EXP	-2.066	-3.600	-3.240	-2.306	-3.000	-2.630
difEXP	-2.681	-3.600	-3.240	-2.807	-3.000	-2.630
HH	-3.750	-3.600	-3.240	-3.758	-3.000	-2.630
difHH	-5.824	-3.600	-3.240	-5.732	-3.000	-2.630
SS	-2.434	-3.600	-3.240	-1.474	-3.000	-2.630
difSS	-3.477	-3.600	-3.240	-3.527	-3.000	-2.630
GII	-2.594	-3.600	-3.240	-2.904	-3.000	-2.630
difGII	-3.273	-3.600	-3.240	-3.491	-3.000	-2.630

Table 3 shows the unit root test results for the series at level I (0) and level I (1). According to the Philips-Perron (PP) unit root test, the test statistics values calculated for the variables EXP, HH, SS, GII and PC, depending on the trend and non-trend conditions, are greater than the critical value within the absolute value at the 5% and 10% confidence intervals, and therefore the H0 hypothesis indicating the presence of a unit root is rejected. As a result, it was decided that the series was stationary at level I (1).

Table 4. Lag Lengths

Lag	LogL	LR	FPE	AIC	HQ	SC
0	-68.217	.	819.1	18.054	17.786	18.094
1	98.621	333.68	8.100*	-19.655	-20.994	-19.456
2	968.884	1740.5	.	-234.221	-236.364	-233.903
3	986.733	35.698*	.	-238.683*	-240.827*	-238.366*
4	979.308	-14.852	.	-236.827	-238.97	-236.506

According to Table 4, the existence of a long-term relationship in series that are stationary at similar levels is important. The existence of a short-term and long-term relationship between variables that are stationary at the same level was analyzed with the Johansen Cointegration test. Before the cointegration analysis, the lag lengths were calculated. According to LR: test statistics, FPE: Final Forecast Error, AIC: Akaike information criterion, HQ: Hannan-Quinn information criterion and SC: Schwarz information criterion, the lag length was determined as 3.

Table 5. Johanson Cointegration Test

Maximum order	Eigenvalue (Trace Statistics)	5% Critical Value
0	1042.867	47.21
1	740.456	29.68
2	463.970	15.41
3	194.162	3.76
4		
Maximum order	Eigenvalue Statistics (Maximum)	5% Critical Value
0	302.411	27.07
1	276.485	20.97
2	269.808	14.07
3	194.162	3.76
4		

According to the information given in Table 5, there is a cointegration vector showing long-term equilibrium relations. Since the calculated Trace statistic value is greater than the 5% critical value, the H0 hypothesis is rejected. The information given in Table 5 proves that there is a long-term equilibrium relation.

Table 6. Error Correction Model

Variables	RMSE	R^2	Chi^2	$P>Chi^2$
D_EXP	466.544	0.916	32.838	0.0000
D_HH	0.348	0.906	29.115	0.0001
D_SS	0.387	0.680	6.382	0.3817
D_GII	1.762	0.843	16.140	0.0130

According to the information given in Table 6, the Error Correction Model was applied to calculate the shocks that occurred in the short term after a long-term relationship was detected. A strong balance relationship was detected between the EXP, HH and GII variables. As a result, it shows that the model works harmoniously.

Table 7. Short-Term Forecast Results with Error Correction Model

	Variables	Coefficients	Standard Deviation	P>IzI
D_difEXP	_ce1	-1.221	0.498	0.014
	difEXP(LD.)	0.613	0.570	0.282
	difHH(LD.)	1196.519	456.042	0.009
	difSS(LD.)	529.778	557.086	0.002
	difGII(LD.)	-69.105	97.116	0.477
	Sabit	-3.850	160.965	1.000
D_difHH	_ce1	-0.000	0.000	0.010
	difEXP(LD.)	0.000	0.000	0.103
	difHH(LD.)	-0.147	0.340	0.665
	difSS(LD.)	-0.226	0.415	0.585
	difGII(LD.)	0.140	0.072	0.053
	Sabit	-0.070	0.120	0.559
D-difSS	_ce1	-0.000	0.000	0.065
	difEXP(LD.)	0.000	0.000	0.213
	difHH(LD.)	0.361	0.379	0.340
	difSS(LD.)	-0.362	0.463	0.434
	difGII(LD.)	0.040	0.080	0.614
	Sabit	-0.015	0.133	0.909
D_difGII	_ce1	0.001	0.001	0.412
	difEXP(LD.)	-0.000	0.002	0.990
	difHH(LD.)	-2.191	1.722	0.203
	difSS(LD.)	-0.727	2.104	0.730
	difGII(LD.)	-0.649	0.366	0.077
	Sabit	-0.053	0.608	0.930

In Table 7, the hygiene and health level (HH) variable has significantly and positively affected the health tourism income (EXP). In other words, the previous period values of the hygiene and health level positively affect the health tourism income (P=0.009). The previous value of the global innovation index (GII) has positively affected its current period value (p=0.077) and is close to the significance limit. According to the model findings, the fact that the error correction terms of health tourism income (EXP) and hygiene and health level (HH) are significant indicates that they will move together in the long term.

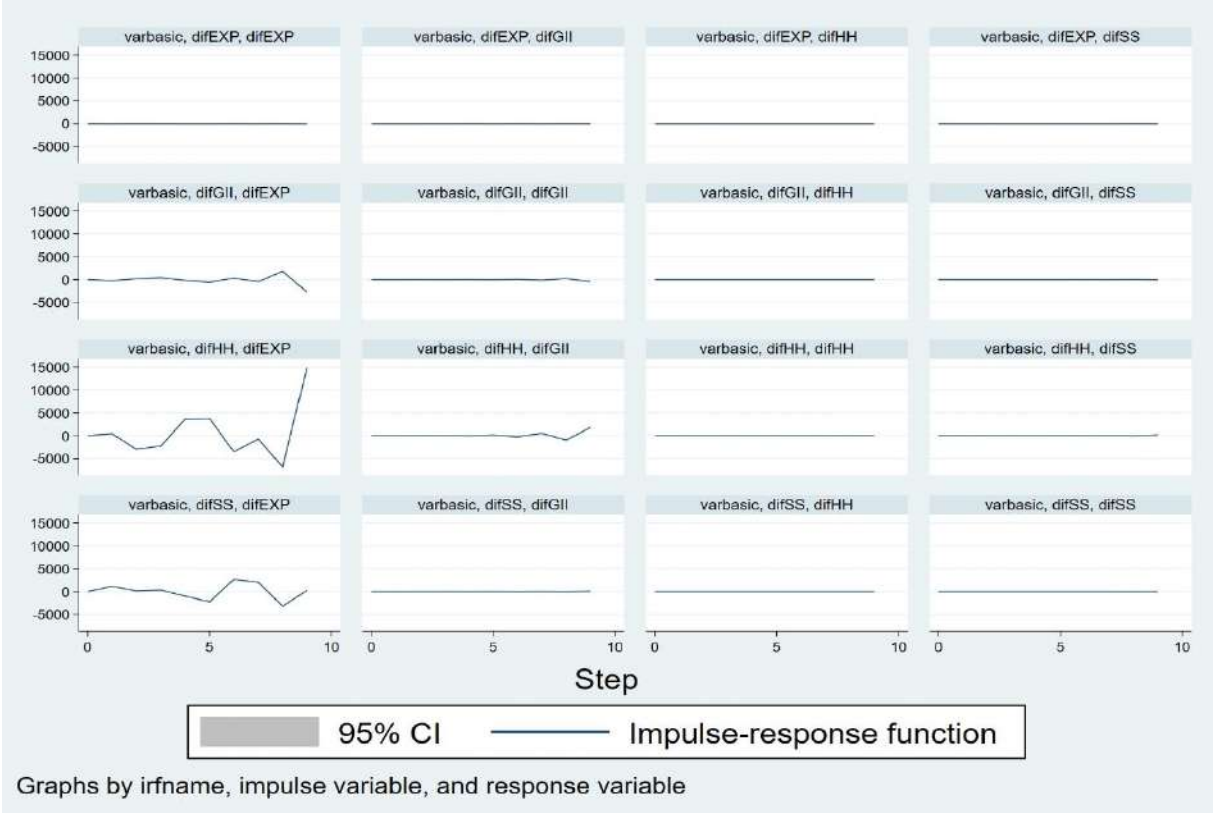

Figure 1. Action-Response Analysis Results

In the impulse response function, when a shock is applied to the series, the effect of this shock should decrease and approach zero and reach equilibrium again. In the graph given in Figure 1, short-term shocks are analyzed with the impulse response function. The EXP variable is affected by shocks from GII, HH and SS. Shocks to the GII variable affected the EXP variable positively and then negatively after approximately the 8th year. Shocks occurring in the HH variable affect the EXP variable irregularly until approximately the first 8 years. Shocks occurring in the HH variable after the eighth year increased the EXP variable positively and significantly. The effects (shocks) in the SS variable kept the EXP variable close to the equilibrium point until the first 5 years. After the fifth year, the SS variable caused irregular responses in the EXP variable, both positively and negatively. According to the findings, shocks to the HH and SS variables affect the EXP variable positively and shocks to the GII variable affect the EXP variable negatively in the approximately 8th year. As a result, health tourism income is significantly affected by indicators such as safety and security, innovative developments in the field of tourism, and hygiene and health levels in the short term.

3. DISCUSSION

Health tourism has become a critical area in terms of meeting the health needs of individuals and contributing to the economic growth of countries. Türkiye, thanks to the provision of health services combined with its traditional tourism potential, attracts attention as a rapidly rising destination in this field (Tontus and Nebioglu 2018). However, certain elements need to be meticulously addressed for the sustainable growth of the health tourism sector. In this context, the importance of innovation, hygiene and security elements becomes even more evident (Panasiuk 2018; Szymańska and Panfiluk 2020). According to the findings, health tourism income is significantly not affected by innovative developments in the field of tourism in the short term. This finding is unsimilar to other studies in the literature. In fact, according to the studies conducted, it has been reported that innovation-related activities increase health tourism income by affecting health tourism preferences (Panasiuk 2018; Ryndach et al. 2024; Szymańska and Panfiluk 2020). According to previous studies and the findings of the current study, innovation is an important determining factor for the future of health tourism. Because the integration of innovative applications and technologies in health services not only increases the quality of service, but also increases the international competitiveness of countries like Türkiye (Erbayraktar et al. 2022). For example, Türkiye's development of innovative solutions such as telemedicine and remote monitoring systems in the health sector improves patients' service experiences while providing the opportunity to reach a wider patient group (Sun 2018; Vudathaneni et al. 2024). However, it is thought that continuous investment and training are necessary for the sustainability of innovation. For this reason, it can be stated that providing the necessary support for professionals and institutions working in the field of health tourism to adapt to innovative applications is of vital importance. In fact, some studies have revealed this situation (Gür et al. 2013; Pirnar 2024; Stoumpos et al. 2023).

It was determined that hygiene and health levels are also important factors affecting health tourism income. In fact, if the hygiene and health level increases by one unit, the health tourism income increases by approximately 1196,519 Turkish liras. This finding actually shows how much importance health tourism service providers should give to hygiene and health levels. This finding is similar to the results of other studies in the literature. Because according to the results of some studies, hygiene standards are seen to be one of the most critical elements affecting health tourism income. The importance of hygiene has increased especially in the post-pandemic period (Chandra

et al. 2022; Serra and Seabra 2023). Patients should consider the hygiene standards of the country where they will receive health services, which necessitates countries providing health services to improve themselves in this regard (Jovanović et al. 2015; Rasethuntsa 2022). In the light of these findings, health tourism destinations are expected to constantly take measures to increase hygiene standards in the provision of health services. They should also announce the measures they take internationally. Only in this way will the promotional activities of health tourism achieve their goal. Because the perception of hygiene is not limited to physical cleanliness. Hygiene also reinforces the sense of trust that patients feel while receiving services (Çapar and Aslan 2020; Chandra et al. 2022).

Another important finding from this study is the determination that the level of safety and security affects health tourism income. This effect shows that a one-unit increase in safety and security increases health tourism income by 529,778 Turkish liras. This finding is extremely important in terms of revealing the importance that should be given to safety and security. In fact, security is an indispensable element for the sustainability of health tourism. According to a study conducted by Toker and Emir (2023) on the subject, it was reported that safety and security phenomena are important variables in tourism. These findings showed an expected effect. Because tourism, by its nature, can contain some risks related to security (robbery, accident, harassment, etc.). These risks are risks that Türkiye, as well as other countries, are trying to minimize. This situation directly affects the perception of security of international patients who will receive health services (Boguszewicz-Kreft et al. 2022). This effect affects patients' preferences and therefore health tourism income.

It can be stated that Türkiye's strengthening of its security strategies has become an important necessity not only for health tourism but also for the general tourism sector. Because health services provided in a safe environment can positively affect Türkiye's health tourism revenues by increasing the psychological and physical comfort of patients. In addition, improvements in security will also strengthen Türkiye's reputation in the global health tourism market (Han et al. 2021; Ruiz et al. 2021; Collins et al. 2022). As a result, in order to increase Türkiye's health tourism potential, innovation, hygiene and security elements should be emphasized. The integration and development of these factors can make Türkiye, a strong actor in the field of health tourism. However, it should not be forgotten that a continuous development and adaptation process is inevitable to achieve these goals (Uslu et al. 2021). The development of a

common strategy by all stakeholders in the health tourism sector by focusing on these elements will play a critical role in Türkiye's sustainable growth goals (Çapar 2022).

In addition to the strengths of this study, it is a fact that it was conducted under some limitations and has weaknesses, as in every study. In fact, since the data year in this study is 12 and the number of observations is low, the fact that the tests conducted in this study may have been weak can be considered as an important limitation. On the other hand, the fact that the study is limited to only Türkiye data should be considered as an important limitation in terms of producing generalizable results. In this context, it should be kept in mind that the study has important but valid results under some criteria. It is recommended that these limitations be eliminated with future studies. In this sense, it is recommended that future studies be conducted multi-centered and examined with different methodologies.

4. CONCLUSIONS

Health tourism is emerging as a critical new economic area that makes significant contributions to Türkiye's economic growth and increases its competitiveness in the international arena. In this context, the importance of innovation, hygiene and security elements in terms of the sustainability of health tourism cannot be ignored. The integration of innovative health practices and technological developments with health tourism will both increase service quality and increase Türkiye's health tourism potential by ensuring patient satisfaction. However, continuous training and investment should be made in this process and healthcare professionals should be equipped with innovative solutions.

Increasing hygiene standards in the post-pandemic period has become one of the most important elements of competitiveness in the field of health tourism. Raising national and international standards to strengthen Türkiye's perception of hygiene will reinforce patients' sense of trust and increase trust in the country's healthcare services. In addition, it should not be forgotten that hygiene should not be limited to physical cleanliness but should also include patients' experiences.

The security element is a critical factor for the sustainability of health tourism. Although Türkiye's geographical location brings some risks, effective management of these risks is essential for patients to receive safe service. Strengthening security strategies will have positive results for both health tourism and the general tourism sector.

It is possible to demonstrate the impact of innovation on health tourism income with some concrete quantitative examples. For example, with tele-television and remote connections, it is now possible for individuals in remote locations to participate in health tourism mobility. In particular, the ability of some patients who cannot participate in health tourism mobility due to distance and time constraints to receive services within the scope of health tourism will increase health tourism income.

Another important development in innovation, artificial intelligence and in-depth examination of big data can diagnose patients and especially determine conditions such as genetic predispositions. In this way, health tourism income can be indirectly increased with a personalized health service plan.

With innovative methods such as virtual and augmented reality, patients can be given the experiences they want in advance. This can create more demand by eliminating patients' doubts. This can positively increase health tourism income.

Another important technology is that health tourism income can be increased by facilitating the management of health data with wearable technologies and increasing satisfaction.

As a result, Türkiye needs to make continuous efforts towards innovation, hygiene and security elements in order to realize its health tourism potential. Addressing these elements meticulously will strengthen the country's position in the field of health tourism and increase health tourism income by ensuring that it assumes a more competitive role in the international market.

In light of this information, the following suggestions can be made:

1. Innovation positively affects health tourism income. Accordingly, especially health service providers and other health tourism stakeholders should give the necessary importance to innovation in every field of health tourism and make these innovations continuous in order to reach potential health tourists. In this regard, especially big data, which is one of the popular technologies of recent years, should be processed and artificial intelligence-supported data analytics should be performed to reveal the tendencies of health tourists. In this way, more effective strategies can be developed. Again, it is necessary to increase patient satisfaction by ensuring the use of relevant health technologies.

2. In order to increase the level of hygiene, necessary in-house and external trainings should be provided to health workers and these trainings should be made continuous. Health workers

should be trained and certified by making this awareness an institutional culture and internal and external hygiene awareness.

3. All kinds of precautions should be taken regarding security and this should be supported by various certifications and good practices. In order to ensure the safety of both healthcare professionals and health tourists, it is necessary to minimize any security vulnerabilities originating from data security, cyber attacks or other institutions and employees. It is necessary to declare and promote these security measures and to commit to the safety of individuals.

4. Health tourism stakeholders should provide all kinds of support to increase hygienic, innovative and reliable practices in every field concerning health tourists. In this regard, it should be constantly monitored by inspecting whether all health tourism stakeholders fulfill their responsibilities.

5. Some negative situations experienced in Türkiye recently have led health tourism politicians to take action and ensure that health tourism and tourist health regulations are revised. In fact, the fact that the new health tourism and tourist health regulation updated on April 26, 2025 has been changed especially in favor of health tourism quality and safety shows that the results of the current study are remarkable in terms of trust and security and are important in terms of providing the evidence that politicians want in this sense. Because these developments in health tourism regulations will often restore the negative image of Türkiye in the foreign press to a positive one and ensure that this image is protected without being damaged.

6. It is essential that health tourism policy is structured in an evidence-based manner. In particular, the scientific findings of this study show why the steps that politicians should take in terms of innovation are important. Therefore, it has been demonstrated once again how necessary and income-generating innovative innovations are, especially in the context of post-COVID-19 remote health applications.

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Trends in Health Management Research: An Analysis of Tübitak 2209 Student Projects

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Abstract

Aim: This study aimed to analyze the distribution of TÜBİTAK 2209-A student research project topics submitted by health management departments and to evaluate the frequency of student projects conducted within these departments.

Methods: In this context, accepted applications from 2020 to 2024 were examined through the TÜBİTAK website, and those originating from health management departments were included in the study. A total of 269 project titles from seven application periods were analyzed using thematic analysis.

Results: Twelve themes were identified in total. Findings indicated that the most frequently studied topics were public health (72 projects), management and organization (46 projects), Covid-19 (30 projects), and patient-physician communication and patient satisfaction (29 projects). Conversely, accounting-finance (2 projects), health tourism (7 projects), and violence (7 projects) were among the less frequently addressed topics.

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Conclusion: The findings of the study highlight prominent research topics in health management departments and provide potential research directions for future student projects, particularly emphasizing less explored areas such as health policies, sustainability, health financing, and digital health technologies.

Keywords: Health Management, TÜBİTAK 2209, Health Management Education, Thematic Analysis

INTRODUCTION

Health management undergraduate education in Turkey began in 1963 with the establishment of the Health Administration Vocational School affiliated with the Ministry of Health, subsequently continuing with undergraduate and graduate programs at Hacettepe University in 1970. Between 1988 and 1996, additional departments opened at Istanbul, Ege, Marmara, Ankara, and Başkent universities, and today nearly all universities offer undergraduate education in this field (Çimen, 2010; Berber, Çandereli & Aslan, 2023).

Health management is a multidisciplinary field within management science involving the planning, organization, direction, coordination, and control of resources to enhance individual and community health. Management of health institutions encompasses technical and social activities within a structured organization to achieve defined objectives (Uğurluoğlu, 2019). The European Health Management Association (EHMA, 2025) outlines the functions of health managers as planning, organizing, staffing, controlling, directing, risk assessment, and decision-making. Health managers ensure their organizations or departments deliver optimal patient care by enhancing efficiency, financial stability, and service quality (EHMA, 2025).

Valiotis et al. (2025) proposed a new approach to defining health management, incorporating principles such as one health, sustainability, and equity. According to this definition: "Health management is defined as the practice of providing guidance and leadership to support and promote health at individual, organizational, and systemic levels. Health management adopts a holistic vision of health that recognizes the impact of behavioral, social, and environmental determinants. In addition to encompassing traditional health management of community, primary, secondary, and tertiary care services, health management extends beyond healthcare settings. Aligned with the 'one health' approach, health management integrates human, animal, digital, and environmental health considerations, promoting synergy with relevant policy and societal areas" (Valiotis et al., 2025).

This new definition highlights that health management should extend beyond traditional management concepts, incorporating sustainability, digitalization, artificial intelligence, health policies, and environmental factors. Current studies in health management increasingly include topics such as environmental sustainability, green hospital practices, remote health services, and digitalization, alongside traditional topics like hospital management, health economics, and patient satisfaction.

As in the rest of the world, digitalization has significantly transformed daily life in Türkiye, particularly following the Covid-19 pandemic. Ersoy and Ersoy (2022) emphasized that the healthcare sector was among the most affected by this transformation. With the advancement of technology, individuals have had to adapt to the digitalization process in healthcare services. From a health perspective, newly developed technologies and methods have enhanced the effectiveness of treatment processes, strengthened communication with patients, improved preventive health practices, and contributed substantially to the managerial functioning of healthcare institutions. Moreover, the digitalization of infrastructure and systems used in healthcare services has necessitated the acquisition of new skills by employees and has compelled healthcare institutions to employ personnel equipped to meet these evolving demands (Akalın & Veranyurt, 2020).

TÜBİTAK supports associate and undergraduate students through the 2209 projects, aiming to encourage research and project development culture (BİDEP, 2024). Applications are submitted by an academic advisor, a project leader, and up to four collaborators, with funding available for equipment, supplies, travel, and services if needed. Although projects can be from any field, students are encouraged to align their work with Sustainable Development Goals.

This study aims to evaluate health management students' projects among the student projects accepted by TÜBİTAK, examining aspects such as the number of projects, annual trends, and topic distribution. For this purpose, TÜBİTAK announcement archives were reviewed using the keyword '2209', and announcements related to 2209-A project results were included in the study. This study is the first thematic analysis of TÜBİTAK 2209-A student projects conducted by health management departments in Turkey. By revealing trends in health management education and research, it may serve as an important guide for future student projects, contributing to the field by identifying frequently studied topics and areas attracting students' attention. Although master's theses and academic studies have previously been conducted in the field of health management (Gül et al., 2015; Şahin & Ocak, 2019; Mısırlıoğlu & Doğan, 2025), the

research topic trends of undergraduate students have not been systematically examined. Thus, the study examined which topics health management undergraduate students are working on.

1. RESEARCH METHODOLOGY

1.1. Type of Research

This study is based on the analysis of 269 project titles accepted within the scope of TÜBİTAK 2209 "University Students Research Projects Support Program" from health management departments between 2020 and 2024. A qualitative research method, thematic analysis, was employed. Thematic analysis is a qualitative method used to identify, analyze, and report themes within data (Braun & Clarke, 2019).

1.2. Research Population and Sample

Project titles were accessed through the official TÜBİTAK website where project results are published. Accepted projects from the health management department during the first and second application periods from 2020 to 2024 were included in the study. Since the results for the first application period of 2020 were not available, seven application periods were included in the analysis. While all other application files were publicly accessible via open links, the results for the first call of 2020 were posted in a restricted area that only applicants could access. Consequently, projects from that period were excluded from the analysis. This may partially limit the representativeness of the data for that year.

1.3. Ethical Considerations

Ethics committee approval was not obtained as no data were collected from participants. Publicly accessible data were used.

1.4. Data Analysis

Data analysis followed the thematic analysis stages outlined by Braun and Clarke (2019). The research process included:

Familiarization with Data: Project titles were collected and examined from the official TÜBİTAK results webpage. The researcher thoroughly examined each of the 269 project titles. During the data-collection phase, PDF acceptance lists for each application period of the TÜBİTAK 2209-A programme—containing university, department, and project titles—were downloaded from the agency's official website. These lists were searched using the keyword "health management" to extract projects supported within health management departments. The resulting project titles and university names were transferred to a Microsoft Excel spreadsheet, and

all statistical and thematic analyses were conducted on this dataset. Data extraction was conducted in November 2024.

Generating Initial Codes: An initial individual analysis was conducted to identify core themes of project titles, initially classifying them into 11 main themes.

Searching for Themes: Similarities and differences in coded titles were analyzed, and recurring themes were identified. This stage aimed to reveal prevalent research topics in health management.

Reviewing Themes: The identified themes were rigorously evaluated by two health management academics to ensure accuracy and comprehensiveness, resulting in an increase to 12 themes with clearer classifications. The 12th theme, labeled "Other," was created for titles that did not fit any of the initially defined themes. Project titles that did not belong to the 11 main themes and could not be grouped into a specific category were classified under this 12th "Other" theme.

Defining and Naming Themes: Each theme was further detailed by subdividing into subcategories, clarifying their contents and assigning functional names.

Report Writing: Results of the analysis, including the numerical distribution of project titles within each theme and subcategory, were presented visually and in tabular formats. The report aimed to outline general trends and highlight focus areas of TÜBİTAK 2209 projects in health management.

1.5. Validity and Reliability

In qualitative research, strategies such as credibility (internal validity), transferability (external validity), dependability (internal reliability), and confirmability (external reliability) are recommended to ensure validity and reliability (Lincoln & Guba, 1985). These strategies were carefully observed in this study. Data were meticulously extracted from a publicly accessible website. Accepted projects in the health management area were verified multiple times for accuracy. The thematic analysis method applied in project title analysis was clearly defined, and the coding process was detailed thoroughly. Two health management experts reviewed and reached consensus during the coding process. Themes were reconsidered for consistency. All research phases were extensively documented and reported, thereby enhancing the validity and reliability of the study.

2. ANALYSIS

In this section, the frequency of TÜBİTAK 2209 student projects during the analyzed years, universities with the highest number of project submissions, and thematic analysis of project titles are presented.

Table 1 shows the yearly distribution of health management projects accepted under TÜBİTAK 2209-A between 2020 and 2024. The highest number of applications was observed in 2023.

Table 1. Distribution of TÜBİTAK 2209-A Health Management Projects by Year

Year	Number of Projects	Percentage (%) of Total Projects
2020 (2nd Period)	11	4,1
2021 (1st Period)	5	1,9
2021 (2nd Period)	38	14,1
2022 (1st Period)	60	22,3
2022 (2nd Period)	38	14,1
2023 (1st Period)	54	20,1
2023 (2nd Period)	63	23,4
Total	269	100

Figure 1. Yearly Increase of TÜBİTAK 2209-A Supported Projects

Figure 1 illustrates the change in the number of health management projects supported by TÜBİTAK 2209-A from 2020 to 2023. An overall increasing trend in project numbers is observed starting from 2020. While there was an increase in the number of projects in 2021, a relatively stable trend was observed in 2022. A notable increase was recorded in 2023.

Table 2 presents the distribution of TÜBİTAK 2209-A supported health management projects by universities between 2020 and 2024. According to the data, Bandırma Onyedi Eylül University (28 projects) and Bayburt University (26 projects) had the highest number of accepted projects, followed by Samsun University (20 projects) and Ankara University (16 projects). Among the top ten universities with the highest accepted project numbers were Sakarya University of Applied Sciences (15 projects), Sakarya University (14 projects), and Karadeniz Technical University (11 projects).

Table 2 was prepared based on application results from the second period of 2020 to 2024. According to available data, the first health management student project supported was from İzmir University of Economics in 2012. Subsequently, in 2013, Süleyman Demirel University had 6 projects accepted. Similarly, in 2015, Süleyman Demirel University's health management department had one project supported.

Table 2. Top 10 Universities with the Highest Number of Accepted Health Management Projects Under TÜBİTAK 2209-A (2020-2024)

University	Number of Projects
Bandırma Onyedi Eylül University	28
Bayburt University	26
Samsun University	20
Ankara University	16
Sakarya University of Applied Sciences	15
Sakarya University	14
Karadeniz Technical University	11
Muğla Sıtkı Koçman University	11
Hitit University	9
Süleyman Demirel University	8

Table 3 shows the thematic distribution and subcategories of health management projects supported by TÜBİTAK 2209-A between 2020 and 2024. A total of 269 projects were analyzed, classified into 12 main themes. The themes with the highest number of projects were public health (72 projects), management and organization (46 projects), Covid-19 (30 projects), and patient-physician communication and patient satisfaction (29 projects). Subcategories illustrate other variables included within the main themes. For instance, within the public health theme, health literacy was the most frequently studied topic. All variables within each project title were included in the subcategories, therefore, the total number of concepts in the subcategory column may differ from the main theme frequency. Generally, the most recurrent subcategories were health literacy, healthcare workers, rational drug use, patient satisfaction, healthy living, e-health literacy, and health technology.

Table 3. Thematic Distribution and Subcategories of TÜBİTAK 2209-A Health Management Projects

Theme	n	Subcategories (n)
Covid-19	30	Vaccine attitude (5), Healthy living (4), Mental health (4), E-health literacy (3), Health literacy (2), Health anxiety (3), Quality of life (3), Others (14)
Public Health	72	Health literacy (16), Rational drug use (11), Healthy living (9), Environmental health (8), E-health literacy (7), Health information seeking (6), Health risk (5), Women's health (5), Quality of life (4), Healthcare utilization (4), Cancer screenings (4), Substance use (3), Vaccine attitude (3), Blood donation (3), Mental health (3), Students (3), Chronic diseases (3), Cyberchondria (2), Marketing (2), First aid (2), Others (9)
Health Tourism	7	Medical tourism (2), Thermal tourism (2), Quality, Marketing
Accounting and Finance	2	Medical accounting, Financial literacy
Management and Organization	46	Healthcare workers (15), Disaster (9), Stress (5), Quality (4), Nurses (4), Students (4), Health managers (3), Administrative staff (3), Burnout (3), Hospital (3), Self-efficacy (3), Work-life balance (3), Organizational culture (3), Organizational commitment (2), Satisfaction (2), Turnover (2), Cynicism (2), Others (10)
Sustainability, Green Hospitals, and Waste Management	10	Green organization-hospital (5), Climate change (2), Waste management (2), Others (2)
Health Management Education and Career	26	Unemployment anxiety (5), Health management education (5), Entrepreneurship (4), Employment (3), Career awareness (2), Satisfaction (2), Emotional intelligence (3), Others (3)
Innovation, Artificial Intelligence, and Digitalization	24	Health technology (10), Telehealth services (5), E-pulse (2), Artificial intelligence (2), Innovation (2), Others (5)
Violence	7	Violence against healthcare workers (7), Trust in healthcare system (1)
Patient-Physician Communication and Patient Satisfaction	29	Patient satisfaction (13), Patient-physician communication (8), Trust in healthcare system (4), Patient rights (2), Rational drug use (3), Patient loyalty (3), Others (8)
Health Policy	11	Brain drain (5), Physicians (3), Others (6)
Others	5	Online farmers (2), Others (3)

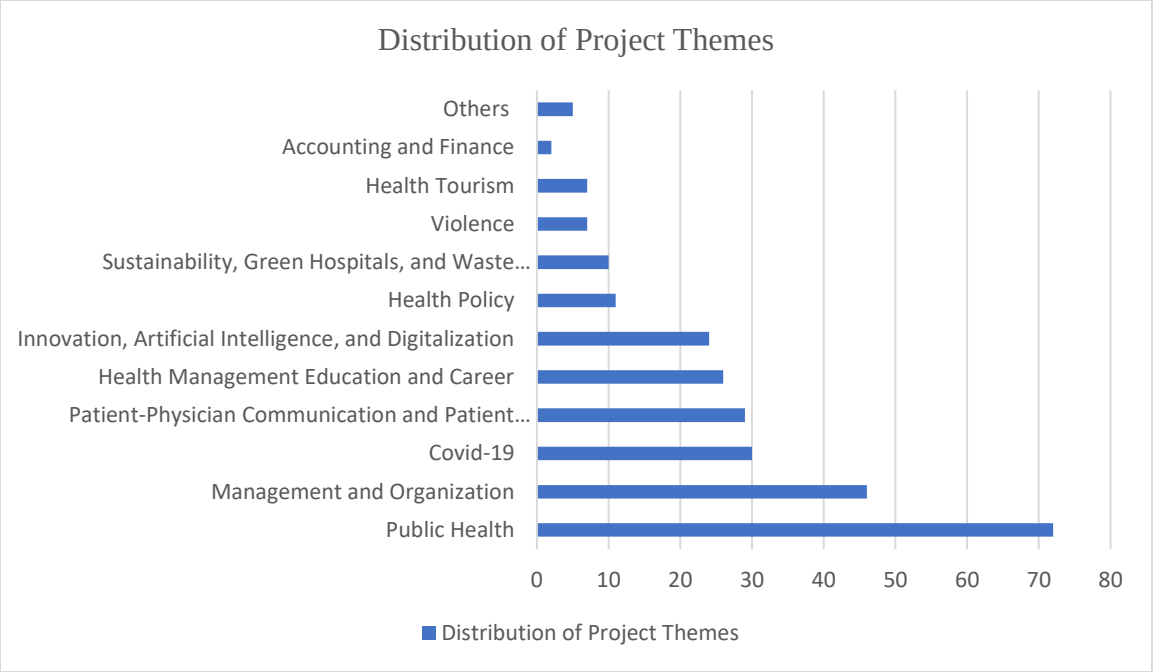

Figure 2. Thematic Distribution of TÜBİTAK 2209-A Health Management Projects (2020-2024)

Between 2020-2024, TÜBİTAK 2209 projects were grouped into 12 themes according to their topics. Figure 2 visually presents the frequency of these themes.

3. DISCUSSION AND CONCLUSIONS

This study evaluated health management projects supported by TÜBİTAK 2209-A between 2020 and 2024 through thematic analysis. A total of 269 projects were examined and categorized into 12 main themes. The themes with the highest number of projects were public health (72 projects), management and organization (46 projects), Covid-19 (30 projects), and patient-physician communication and patient satisfaction (29 projects). Conversely, fewer projects were conducted on topics such as health policy (11 projects), health tourism (7 projects), violence in healthcare (7 projects), and accounting-finance (2 projects).

Misirlioglu and Dogan (2025) analyzed studies from the Web of Science database related to health management from 2020 to 2024, identifying the most frequently recurring keywords as Covid-19 (496), public health (154), management (117), pandemic (109), education (89), mental health (88), health policy (77), nursing (75), patient safety (67), and quality of life (67). Compared to our findings, the themes of Covid-19, public health, and management align closely, highlighting that prominent themes in TÜBİTAK 2209-A projects correspond well with international literature, underscoring health management's responsiveness to global health issues.

Valiotis et al. (2025), proposing a new definition for health management, emphasized concepts such as 'One Health', digital health, environmental health, inter-sectoral collaboration, multidisciplinarity, varying governance levels, and behavioral, social, and economic determinants of health, along with governance structures. The prominence of these themes in TÜBİTAK 2209-A projects indicates adaptability within the discipline of health management. Although the thematic distribution obtained in this study partially aligns with the holistic "One Health" framework emphasized by Valiotis et al. (2025), notable gaps remain; in particular, the limited attention to environmental sustainability, health financing, cross-sector collaboration, and AI-supported management practices indicates that the interdisciplinary perspective has not yet been fully achieved and underscores the need for future research to focus on these areas.

Management education is critical for health service managers to improve system performance. Davies (2006) argues that management education curricula should enhance understanding of the practice context, foster research awareness, and develop critical evaluation skills. Barati et al. (2016) identified eight essential skill areas for hospital managers, including communication, experience, organizational logistics/sensitivity to infrastructure, managerial skills, motivation, systematic problem-solving, ethics, and financial/legal awareness, emphasizing the greater importance of practical over theoretical skills. Focusing students' research on these skill areas will equip them with practical competencies and prepare them to become effective leaders in healthcare management.

Future research in health management should prioritize interdisciplinary approaches, technological integration, and digital transformation. Kaçak (2023) highlighted that digital health—intersecting digital technologies and healthcare—has gained popularity, particularly during the Covid-19 pandemic, resulting in a 47.5% annual increase in scientific research in digital health technology. Zeybek, Zeybek, and Aslan (2023) stressed the importance of increasing health sciences students' awareness of digital health technologies, improving their post-graduation success and workplace adaptation. The limited attention given to health policy, financing, and digitalization in student projects might result from insufficient interest among academic advisors and students or the inadequate emphasis on these topics within curricula. Educational curricula must evolve in response to technological advancements and changing needs, expectations, and requirements.

Health management undergraduate programs prepare professionals for complex healthcare institutions involving multiple disciplines. Berber et al. (2023) noted the substantial growth in health management education from 15 universities in 2010 to 86 in 2022, highlighting the rising demand for professional health managers. Bloom, Lemos, Sadun, and Reenen (2020) advocated that hospitals led by professionally trained managers show improved management practices and enhanced clinical performance. Increasing health management education and the growing need for qualified managers necessitate strengthening educational quality in this field. Yorulmaz (2018) identified three main problems faced by the health management profession: educational issues, health management policies, and lack of professional recognition. Sub-themes included a shortage of qualified academics, substandard education quality, inconsistent standards across institutions, and inadequate practical training. Filiz (2021) noted that only one-third of 440 academics in health management departments had undergraduate degrees specifically in health management, highlighting the need to enhance academic staff qualifications and curriculum effectiveness. In light of these challenges, measures that facilitate graduates' employability are essential for the field of health management. To increase employment and strengthen healthcare delivery with qualified leaders, health management programs must closely follow sectoral developments. Regularly updating curricula and incorporating areas such as artificial intelligence and digitalization are critical steps. Throughout the four-year degree, students should gain not only theoretical knowledge but also enriched practical experience through internships, hands-on training, and projects such as those funded by TÜBİTAK. Given the importance of communication skills in the service sector, participation in such projects will also help students develop effective communication and express themselves confidently.

Karataş and Öztay (2023), in a study examining student and teacher perspectives on eTwinning project implementations, reported that project-based learning enhances social skills such as communication, collaboration, and responsibility among students. Participation in research projects significantly benefits students' personal and academic development, enhancing problem-solving abilities, scientific skills, critical thinking, and confidence. Kurt, Kurt, and Akici (2024) similarly observed positive outcomes, including increased responsibility, improved communication skills, creative thinking, and a sense of personal value from involvement in TÜBİTAK 2204-B research projects.

Student projects emerge as a crucial component in health management education, enabling students to develop teamwork, research, problem-solving, and innovative thinking skills. Acceptance of TÜBİTAK-funded projects boosts students' academic success and confidence and motivates other students to pursue research. Completing projects successfully also encourages students to pursue postgraduate education.

Focusing student projects on contemporary and strategic topics relevant to strengthening the healthcare system contributes to competency development and sectoral problem-solving. Encouraging a project culture among students is vital for equipping future health managers and addressing managerial shortages in the healthcare sector.

The processes of conducting research, interacting with individuals, and completing a research project offer significant theoretical and practical benefits to students. Therefore, encouraging student projects can be considered an important factor for enhancing both the academic and practical quality of education within the discipline of health management. The prominent themes identified in TÜBİTAK 2209-A projects suggest that the health management discipline is expanding beyond its traditional framework, indicating that students should increasingly focus on topics such as innovation, sustainability, and artificial intelligence.

This study was conducted using project titles accepted under the TÜBİTAK program by students in the Health Management Department. Because project summaries are not published in the final reports, detailed information about the projects could not be obtained. The aim of the research is to identify the current topics of study from the students' perspective and to determine which themes the general trends focus on. Future studies could explore the reasons behind these trends by conducting in-depth, face-to-face interviews or focus group discussions with the students whose projects were accepted.

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An Assessment of Psychological Resilience Levels of Dental Students as Future Healthcare Workers [a]

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Abstract

Aim: Dental education includes both theoretical knowledge and clinical practice so that students acquire the skills to prevent, diagnose and treat oral health problems. The students of this field of healthcare usually feel overwhelmed in completing clinical requirements due to difficulty in keeping up with the workload. In this perspective, this study aimed to examine the psychological resilience levels in dental students as future healthcare workers.

Methods: This cross-sectional study included 1,228 dental students: 678 from a foundation university (FU; 428 female, 250 male) and 550 from a public university (PU; 358 female, 192 male), both of which are located in Istanbul, Turkey. Data were collected through a questionnaire regarding sociodemographic profile, education related factors and the Brief Resilience Scale (BRS). The scale consists of a 6-item evaluation method with scores ranging from 1 to 6. BRS scores were categorized as low (<3) or normal/high (≥3).

Results: The results revealed a lower BRS score (3.12±0.78 for FU students vs. 2.97±0.82 for PU students) and a higher ratio of low resilience (33.9% vs. 46.5%) for PU students compared to FU students ($p<0.001$). Female students (2.98±0.77 at FU; 2.82±0.77 at PU) scored lower than males (3.35±0.77 at FU; 3.27±0.84 at PU) in both universities resulting in the BRS score ($p=0.001$). Among PU students, clinical-phase students had lower BRS scores than preclinical ones ($p<0.05$), unlike FU students ($p>0.05$).

Conclusion: Since psychological resilience levels of dental students are likely to be affected by differences in gender, educational stage and university type, both support and mentoring programs must be developed to enhance resilience during dental health education in both types of universities.

Keywords: Psychological resilience, dental health education, dentistry students, clinical practice

INTRODUCTION

Dental health education worldwide is shaped within the framework of patient-centered care, evidence-based practices, and lifelong learning principles. International accreditation bodies oversee the alignment of educational programs with quality standards, revising the key components such as curriculum, clinical training, and ethical values (CDA, 2023). In Turkey, a core curriculum program has been developed to standardize pre-graduation dental education by international principles. This program aims to structure educational processes, improve student assessment methods, and support professional development (DUÇEP, 2024). Furthermore, through multidisciplinary collaborations and the integration of digital technologies into the

education process, the program aims to develop the students' awareness of ethical and professional responsibilities, thereby preparing them more comprehensively for their careers after graduation (CDA, 2023; DUÇEP, 2024). Multidisciplinary collaboration enhances the continuity and coordination of patient care, embodying a more effective and holistic treatment process through collaboration with other healthcare professionals. This approach enhances students' preparedness for medical and dental emergencies while also fostering an understanding of patients' psychosocial factors, ensuring that they acquire both theoretical knowledge and practical skills for professional competency in dentistry education (Mariño et., al, 2022).

Dental health education includes a comprehensive curriculum based on both theoretical knowledge and clinical practices so that students acquire the skills to prevent, diagnose, and treat oral health problems (Li et., al, 2022). During this process, students acquire basic knowledge through non-clinical courses, gain experience in laboratory studies and applications, which require manual skills, and develop both technical and risk-assessment skills in patient-care while working with real patients in the clinic-based education, achieving competence in all aspects of surgical and therapeutic dental treatment before graduation (Elani et., al, 2014; Li et., al, 2022). As all the other university students, dental students also experience stressors in their educational lives such as exams, fear of failure, inability to keep up with the workload, in addition to lack of time to complete clinical and curriculum requirements, facing their physical and psychological adverse effects (Collin et., al, 2020). In addition, it is pointed out that dental health education poses difficulties in adapting to rapidly changing health needs, financial costs and technological integration creating significant challenges which lead to stress, burnout, and low academic performance among students (Ryder & Morio, 2011).

Given the rigorous nature of dental education and the high levels of stress experienced by students, psychological resilience is a critical factor influencing their academic performance and overall well-being, as academic stress can lead to underachievement, physical complaints, absenteeism, and ultimately dropping out due to mental health problems (Chyu & Chen, 2022). Given these challenges, understanding the process by which dental students develop psychological resilience is essential for supporting both their academic success and overall well-being. Psychological resilience, defined as “the ability to recover from the negative effects of challenges such as stress, illness, or mental health problems”, can more broadly be defined as “the ability to adapt successfully to disturbances that threaten the viability, functioning or development of a

system" (Fletcher & Sarkar, 2013; Masten, 2014). In this sense, students with high levels of psychological resilience are more capable of managing stressful conditions and challenges (Dong vd., 2024; Sever & Tatlıcıoğlu, 2024). Studies carried out on health science students show that psychological resilience reduces burnout (Gong et., al, 2023), and increases the sense of belonging and academic progress (Mcdermott et., al, 2020). It is generally stated that among medical students, increased psychological resilience is associated with reduced perceived stress, highlighting the importance of integrating educational interventions and stress-coping skills into medical education programs to foster positive thinking (Lu vd., 2024). Another qualitative study conducted with medical students highlights that both cooperative learning and effective interaction are crucial components of a resilient clinical education system (Jalali vd., 2025).

Despite increased study on proficiency in practicing essential clinical procedures, psychological resilience and mental readiness among dentistry students are not extensively studied. While high-level education, cutting-edge technologies, patient relationship management, and professional achievement are significant aspects that build psychological resilience in the profession, dentistry also demands interpersonal understanding, self-control, meticulousness, and cultural competency (McDonald & Paganelli, 2021).

In Turkey, The National Core Education Program for Dentistry (DUÇEP-2024) has been developed to define the minimum competency standards. The program entails a set of realistic baseline standards by considering the institutional capacities of each faculty at various universities across Turkey, encourages those with stronger resources to exceed the established standards and promotes the development of institution-specific priorities through customized curricula and Extended Education Programs (EEP) (DUÇEP, 2024) depending on their resources. Although organizational structures and cultures may vary among faculties, "communication" among the parties of the education process remains a critical component of dental education (Badur, 2024).

Taking into consideration the standards established by DUÇEP and varying standards of faculties across Turkey, understanding the differences among students' gender, educational and demographic background is vital. In this respect, analyzing the impact of academic workload, and clinical experiences on the stress levels and methods to improve the students' psychological resilience can offer valuable insights for optimizing educational strategies, particularly as dental curricula continue to evolve in response to national and global standards (Duś-Ilnicka et., al, 2024; Sabri et., al, 2024; Spielman, 2024). As predicted, workload is high in public dental schools. While

heavy workloads may increase stress and burnout among dental students, it is still unknown whether workload has a direct impact on resilience levels of dental students. Therefore, this study aimed to evaluate the psychological resilience levels of dental students and to examine whether these levels differ based on factors like gender, type of university (foundation vs. public), and educational phase (preclinical vs. clinical).

1. RESEARCH METHODOLOGY

This cross-sectional study was designed to measure psychological resilience of dental students at a Foundation (FU) and a Public university (PU) by using the "questionnaire method". The questionnaires distributed to the dental students of the universities were completed in the classroom on a voluntary basis. The principle investigator' affiliated institution was selected as a foundation university.

Ethical approval for the study was obtained from the Ethics Committee of Marmara University, Institute of Health Sciences (Approval No: 65, dated May 23, 2022), and the study was conducted between September 26, 2022, and May 30, 2023.

In this study, the "random sampling method" was used with the aim to reach the entire sample group (Public University: n = 810; Foundation University: n = 776; Total: n = 1586). Response rate was 77% of the dental students participated in the study due to its voluntary-based nature. The participants of the study consisted of 678 students (F/M: 428/250) studying at the dentistry faculty of a foundation university and 550 students (F/M: 358/192) studying at the dentistry faculty of a public university.

The dental education curricula both in public and foundation universities require that the 1st and 2nd-year students carry out laboratory studies in the preclinical stage, while the 3rd, 4th, and 5th-year students work on real patients during the clinical education stage. Students of all grades were included in the study, and both the preclinical and clinical students were compared in the study.

The inclusion criteria of students in the study were as follows: being an actively enrolled dental student and providing informed consent. Students who were not attending regularly, who did not volunteer to participate and who were diagnosed with health problems negatively affecting their education and daily life were excluded from the study.

1.1. Data Collection Tool

The survey questionnaire consists of questions on students' sociodemographic characteristics and the impact of clinical practices on professional practices. The survey was conducted and supervised by expert opinion, with the primary aim to assess the current situation and contemporary practices. As part of a pilot evaluation, the survey was administered with 30 participants, and no issues regarding its comprehensibility were identified.

Brief Resilience Scale (BRS): The brief psychological resilience scale used in the survey was developed by Smith et al. (2008) to assess the ability to cope with lifelong risks and difficulties (Doğan, 2015; B. W. Smith et., al, 2008). The BRS, which has a single-factor structure, is a 6-item self-report style measurement tool and is graded on a 5-point Likert scale. The participants are categorized into 3 groups as low resilience (<3 points), normal resilience (3-4.3 points), and high resilience (4.31-6 points) (Rojas et., al, 2018; B. W. Smith et., al, 2013). It was adapted by Doğan (2015) to be used by Turkish researchers. Reliability and validity studies were conducted after its adaptation (Doğan, 2015). The reliability of the Turkish version of the BRS was assessed using internal consistency analysis, and the Cronbach's alpha coefficient was reported to be 0.83 (Doğan, 2015). Similar results were obtained in a different study (Kaiser-Meyer-Olkin measure = 0.75; $p < 0.001$) (Fung, 2020).

In the present study, the Cronbach's alpha internal reliability coefficient for 6 items of the BRS was found to be 0.859, which was rather high. The construct validity of the BRS was examined through factor analysis (Kaiser-Meyer-Olkin measure = 0.85; $p < 0.000$), confirming that all six items loaded onto a single factor were consistent with the original scale. In a recently published article, a similar result found in a survey conducted on Turkish patients with Primary Sjögren's syndrome, the BRS demonstrated a reasonable construct validity (KMO = 0.71; $p < 0.001$), with items loaded onto a single factor consistent with the original scale (Sevimli vd., 2024).

1.2. Data Analysis

Data were analysed using the SPSS 28.0 (IBM, USA). As the collected data did not turn out to follow a normal distribution, non-parametric tests, such as Mann-Whitney U and Kruskall-Wallis tests were employed to measure the differences between groups. The effect sizes and confidence intervals are presented in the tables. Effect sizes were calculated using Cliff's delta and interpreted as follows: small ($|\delta| < 0.147$), medium ($0.147 \leq |\delta| < 0.33$), and large ($|\delta| \geq 0.33$) (Cliff, 1993).

1.3. Ethical Approval

Ethical approval for the study was obtained from the Marmara University Health Sciences Institute Ethics Committee on 23 May 2022, under number 65.

2. ANALYSIS

The ratio of female students was found to be 63.1% at the Foundation University to 65.1% at the Public University. The mean age of Foundation University students was 21.94±2.35 and that of Public University students was 21.44±2.03 (Table 1).

Table 1. Demographic Characteristics of Dental Students in Both Universities

		Foundation University (n=678)		**Public University (n=550)**	
Variables		**Mean**	**SD**	**Mean**	**SD**
Age (years)		21.94	2.35	21.81	2.06
		n	**%**	**n**	**%**
Gender	**Female**	428	63.1	358	65.1
	Male	250	36.9	192	34.9
Grade Level	**1 st Grade**	87	12.8	129	23.5
	2 st Grade	129	19	134	24.4
	3 st Grade	137	20.2	75	13.6
	4 st Grade	112	16.5	107	19.5
	5 st Grade	213	31.4	105	19.1

In the study group, the mean score of Foundation University students (3.12±0.78) was higher than that of the Public University students (2.97±0.82) by the BRS (p=0.001). Another considerable result was that while 59.9% of students attending the Foundation University displayed normal resilience, 46.5% of students at the Public University showed low resilience. The results are shown in Table 2.

On the BRS, the mean scores of females (2.98±0.77, 2.82±0.77) turned out to be considerably lower than the those of male students (3.35±0.77, 3.27±0.84) at the dental schools of both universities (p = 0.001). At the Public University, a decrease in the BRS score was observed at the clinical phase (2.79±0.82 vs. that at the preclinical phase (3.17±0.77) (p=0.001), unlike the

Foundation University (p>0.05). The results also suggest that at both universities, female students demonstrate lower psychological resilience scores than their male peers (p<0.05) (Table 3).

Table 2. BRS Scores of Students in both Foundation and Public Universities

	Foundation University (n=678)		Public University (n=550)				
	Mean	**SD**	**Mean**	**SD**	**p**	**Cliff's delta**	**95% CI**
Brief Resilience Scale (BRS)	3.12	0.78	2.97	0.82	***0.001****	0.131	0.044-0.216
	n	**%**	**n**	**%**			
BRS-Low resilience**	230	33.9	256	46.5	***0.000****		
BRS-Normal resilience and High resilience ****	448	66.1	294	53.5			

** Mann Whitney-U test was used for analysis.* **Low BRS score: 1,0-2,99 points; *** BRS score: 3.0-4,3 points in Normal Resilience and 4.31-6.0 points in High resilience

Table 3. Comparisons of Brief Resilience Scale Scores by Gender and Educational Stage Dental Students

		Foundation University (n=678)					Public University (n=550)				
		Mean	**SD**	***p***	**Cliff's delta***	**95% CI**	**Mean**	**SD**	***p***	**Cliff's delta**	**95% CI**
BRS	**Female**	2.98	0.77	***0.001****	-0.342	(-0.417, -0.266)	2.82	0.77	***0.001****	-0.391	(-0.474, -0.308)
	Male	3.35	0.75				3.27	0.84			
	Pre-clinic	3.07	0.74	0.099	0.330	(0.247, 0.412)	3.17	0.77	***0.001****	-0.059	(-0.145, 0.028)
	Clinic	3.14	0.80				2.79	0.82			
	Pre-clinic 1 st Grade	3.14	0.85	0.089**			3.18	0.81	***0.001****		
	Pre-clinic 2 st Grade	3.02	0.65				3.17	0.72			
	Clinic 3 st Grade	3.14	0.82				2.76	0.80			
	Clinic 4 st Grade	3.27	0.84				2.71	0.86			
	Clinic 5 st Grade	3.07	0.77				2.89	0.80			

**Mann Whitney-U test and . **Kruskall-Wallis test were used for analyses*

In both universities, elevated BRS scores were observed among dental students, who reported that clinical practice increased their self-confidence and motivation while improving their problem-solving skills and decreasing their anxiety levels ($p<0.01$) (Table 4).

Tablo 4. Evaluations of BRS Score according to Effects of Clinical Practice in Dental Education

		Foundation University (n=678)			Public University (n=550)		
		BRS Score			BRS Score		
		Mean	SD	*p**	Mean	SD	*p**
Clinical practice increased my self-confidence.	Disagree	2.94	0.81	**0.001**	2.83	0.84	***0.001***
	Agree	3.20	0.76		3.08	0.78	
Clinical practice increased my anxiety level.	Disagree	3.24	0.74	**0.001**	3.29	0.74	***0.001***
	Agree	2.96	0.81		2.81	0.81	
Clinical practice increased my motivation.	Disagree	3.06	0.80	***0.001***	2.92	0.78	***0.001***
	Agree	3.16	0.77		3.01	0.84	
Clinical practice improved my problem-solving skills.	Disagree	3.02	0.79	***0.008***	2.75	0.74	***0.001***
	Agree	3.16	0.78		3.06	0.83	

**Mann Whitney-U test was used for analysis.. *p-Value < 0.05. BRS, brief resilience scale,*

3. DISCUSSION

It is stated that dentistry students experience high levels of stress and anxiety as well as high workload during their education periods (Stormon vd., 2019). Therefore, evidence-based dental education programs are essential to develop dental students' professional competence and problem-solving skills. Once they are qualified with these skills, dentistry students will practice with an ethical, scientific, and patient-oriented approach (Imorde et., al, 2020). Therefore, this study aimed to examine the psychological resilience levels of dental students and related factors affecting their overall well-being as future healthcare workers.

A thorough analysis reveals that the BRS scores of students at the Foundation University were higher than those of the Public University students. Moreover, the female students scored lower than the male students on the BRS indicating that female students experience more difficulty in coping with stress and have lower psychological resilience than male students. Similar results were obtained in the previous studies carried out by Aydın and Egemberdiyeva (2018) and Kılıç et al. (2020). The psychological resilience scores of male students were found to be significantly higher than those of female students (Aydın & Egemberdiyeva, 2018; Kılıç et., al, 2020). In a

similar study conducted by Yılmaz and Oz (2015) on university students in the fields of dentistry, pharmacy, medicine, and health sciences, similarly, the resilience scores of male students were found to be higher than those of the female students in the same fields of study (Bahadir-Yilmaz & Oz, 2015). Another research by Mangoulia et al. (2025) also reported that male dental students had higher psychological resilience levels than their female counterparts (Mangoulia vd., 2025). In another study conducted with university students at different faculties in Oman, the scores of psychological resilience of male students also proved to be higher than those of the females (Al Omari et., al, 2023). In another study conducted by Alsharif (2020) on dental students, female students expressed higher levels of emotional exhaustion associated with resilience (Alsharif, 2020). Montas et al. (2021), also came up with the results that male dental students had higher BRS score than those of the female ones (Montas vd., 2021). In short, studies seem to reveal similar results with few exceptions. For example, other studies conducted on dental students in Saudi Arabia and the United States indicated that female students demonstrated higher psychological resilience than males (Aboalshamat et., al, 2018; C. S. Smith et., al, 2020). These contradictory results could be interpreted as follows: psychological resilience may vary by gender across different cultural and academic contexts, and is influenced by both internal and external factors (Aboalshamat vd., 2018; Montas vd., 2021; Smith vd., 2020; Zhao vd., 2016). The results of our present study basically align with most of the previous study results.

The BRS scores of the dental students at the Public University revealed that the pre-clinic students were endowed with higher psychological resilience, suggesting that the new students of the faculty were equipped with better coping skills with stress or face fewer challenging situations than the ones in higher grades. Additionally, the higher scores of pre-clinic students compared to those commencing their clinical training suggested that the increasing academic workload and clinical responsibilities through the years may adversely affect their psychological resilience. The scores of the students at the Public University, varying considerably from the ones at the Foundation University may be explained by the heavier workload at public universities than the foundation universities. While dental education programs emphasize patient-centred care and professional competency, it is also important to consider students' psychological resilience and the challenges they face during their training periods (Maragha vd., 2023; Weraarchakul vd., 2016).

Our study carried out with students at two types of universities in Istanbul Turkey, namely Public and Foundation, examined the relationship between students' evaluations of clinical

practices and their BRS scores. The results revealed that the increased resilience level was associated with enhancing the students' self-confidence and motivation while improving their problem-solving skills and decreasing their anxiety levels. Rodriguez-Molinero et al. (2024) conducted a similar study on dental students, suggesting that students exhibit high resilience skills along with low levels of anxiety (Rodríguez-Molinero vd., 2024). It is a commonly accepted fact that problem-solving skills are one of the most efficient components of the education process (Coşkun vd., 2014). When dental students develop these skills, they, like all the other healthcare students possessing these skills, demonstrate higher levels of psychological resilience and become academically successful. With the help of greater resilience, even under stress, dental students exhibit more advanced team behaviour, patient-centred approaches, analytical thinking and improved problem-solving skills (McKenzie & Cruz Walma, 2024). Therefore, it should be emphasized to expand training programs with a mental health component and problem-solving techniques using the implementation of targeted seminars, curriculum revisions and the strengthening of peer support systems (Ertekin Pinar vd., 2018; Kunzler vd., 2020). Our results indicated that effective clinical education enhances professional competency and supports students' psychological resilience. Moreover, educational programs should incorporate supportive interventions to raise students' psychological resilience levels, particularly during the transition period to the clinical phase, in line with a focus on patient-centred care and professional competence.

4. CONCLUSIONS

This study revealed that the psychological resilience level of dental students could be affected by gender, educational stage and type of university. Based on these findings, it is recommended that well-structured resilience-enhancement programs—such as mindfulness training, stress management workshops, and peer support groups—be integrated into the curriculum of dentistry faculties, particularly during the transition process to clinical training. Faculties should provide periodic counselling and psychoeducational services aimed at strengthening students' self-awareness and stress-management skills. Given the lower resilience levels observed among female students, the development of targeted support mechanisms, such as female mentor pairing and motivational group therapy sessions, should be prioritized. The assessment and improvement of educational environments, advisor accessibility, and student guidance systems available for

dentistry students all play crucial roles during the education and training periods. Since developing strategies to strengthen students' psychological resilience is critical for academic success, our results may contribute to developing mentoring and support programs to enhance the psychological resilience of dental students during the education period.

While this study had the potential to be one of the pioneers to systematically and scientifically examine psychological resilience among dental students in comparison to other student populations, its ability to fully elucidate cause-and-effect relationships was limited due to its cross-sectional approach. In addition, the sample was restricted to dental students selected from two specific universities in the same geographic region. This may limit the generalizability of the results and affect their applicability to large student populations in other universities and regions. Future studies are necessary to focus on the factors related to psychological resilience with follow-up studies.

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The Relationship Between Nomophobia and Cyberloafing in Health Workers a Research Directed at The Study: Descriptive a Research on

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Abstract

Problem of the Study: With the increasing prevalence of smartphones in professional environments, nomophobia-the fear of being without a mobile phone-has become a growing concern. In parallel, cyberloafing, defined as using the internet for personal purposes during work hours, has also increased. Especially in healthcare settings, where attention and efficiency are crucial, these behaviors may negatively affect service quality and productivity. This study addresses the gap in literature concerning the relationship between nomophobia and cyberloafing among healthcare professionals.

Aim: The aim of this study is to determine whether there is a significant relationship between nomophobia and cyberloafing among healthcare workers and whether this relationship differs based on demographic variables.

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Method: The research was conducted using a descriptive and correlational design. A total of 489 healthcare workers from public and private hospitals in Adana, Türkiye participated. Data were collected via the Nomophobia Questionnaire (NMP-Q) and a validated Cyberloafing Scale. Since the data did not meet the assumptions of normality (as assessed by the Shapiro-Wilk test), non-parametric tests including Mann-Whitney U, Kruskal-Wallis, and Spearman's rho correlation analysis were used.

Results and Conclusions: The findings revealed a strong, statistically significant positive correlation between nomophobia and cyberloafing ($r = 0.684$, $p < 0.01$). Higher nomophobia and cyberloafing scores were observed among single participants, individuals with higher income, and those with 16–20 years of professional experience. No significant differences were found based on age or gender. The results highlight the impact of digital dependency on workplace performance and emphasize the need for institutional awareness and preventative strategies.

Keywords: Nomophobia, Cyberloafing, Healthcare Workers, Smartphone Dependency, Digital Behavior

INTRODUCTION

The rapid advancement of mobile and digital communication technologies has dramatically transformed both social structures and workplace dynamics. Nomophobia, derived from "no mobile phone phobia," refers to the discomfort or anxiety experienced when individuals are unable to access their mobile phones. This psychological condition has become increasingly common due to the widespread use of smartphones. Similarly, cyberloafing, defined as the use of the internet for personal purposes during working hours, has become a growing concern in organizational settings.

This study focuses on healthcare professionals, a group for whom concentration and performance are critical, aiming to explore whether nomophobia is linked to cyberloafing and how these behaviors vary across demographic profiles.

Recent advances in communication and information technology have led to global changes. With the development of technology, it is an important example that individuals can easily solve all their work thanks to mobile phones that provide one-to-one convenience in the daily life of individuals (Güler vd, 2019).

The changes that took place at the end of the 20th century and the beginning of the 21st century increased the importance of the terms social change and data society. In the same period, traditional industry was replaced by information technologies, technological developments came

to the fore, and people's social ties also changed. In particular, changes in technology have led to changes in social ties. The transition from manual methods to digital technologies has also brought transformation in the field of sociology. Although it has brought many positive situations with the developments in technology, it has also caused a number of negative situations. Especially in our age, with the rapid development of information technology, its value is increasing rapidly day by day. Thanks to Internet technology, the power of information is increasing globally (Yıldız vd, 2020).

Nomophobia

Nomophobia, derived from No mobile Phobia, is the extreme fear of disconnection from cell phone communication. It is the smell of being deprived of the cell phone in some way. This condition, which can be defined as one of the emerging syndromes of our modern age, has become widespread, especially after the increasing use of smartphones (Yıldırım vd, 2018).

Nomophobia was first studied in the world in 2008 by the Postal Service in the UK. It was reported that 53% of the participants felt uncomfortable when they lost their smartphones, when their batteries ran out or when they had no signal, 58% of men and 48% of women had this anxiety, and 9% of the participants felt stressed when the new generation cell phone was not turned on (Erdem vd, 2017).

Virtual Shirking

When the literature is examined, the term cyberslacking is referred to as "cyberslacking", "cyberloafing", "cyber deviqnce", "cyberdeviancy", "personal web usage" and "cyberbludging" in the studies conducted in English, while in the studies conducted in Turkish, it is referred to as "cyberslacking", "cyberloafing", "cyber laziness", "cyber deviqnce", "cyberdeviancy" and "cyberbludging". In the literature, there are many different definitions of the term cyberloafing (Özüdoğru vd, 2020).

Cyberloafing refers to the use of the internet by employees for their own benefit during working hours at the workplace. Apart from the use of the internet during working hours and outside the workplace, the extensions of the cyberloafing attitude in the form of virtual deviance, internet abuse, using the internet as entertainment on the computer during working hours also express the problems caused by the internet as a result of simplicities. The problems it causes in business life are increasing day by day (Çetin vd, 2020).

Virtual shirking refers to the use of technological tools obtained by businesses for purposes other than fulfilling what needs to be fulfilled. People who engage in cyberloafing activities may increase their level of knowledge, skills and personal development. Conversely, when people engage in virtual shirking during work time, it can disrupt the functioning of the workplace (Gezer vd, 2020).

It means that the employee utilizes the internet network of his/her workplace for private purposes during working hours. In other words, cyberloafing includes the use of the internet facility of the workplace where the individual works, surfing the internet sites outside the workplace during working hours in line with personal tastes and preferences, or taking actions such as e-mail with his/her private request (Lim vd, 2012).

Some scholars classify cyberloafing as deviant organizational attitudes on the basis that when an individual spends his/her full time in the opposite way, he/she ends up not benefiting his/her organization, while others believe that it cannot be considered entirely negative because it gives the individual creativity, docility, and a learning environment (Blanchard, 2008).

In the literature as reasons for cyberloafing,

- Personal Development Behaviors,
- Recovery Behaviors,
- Addiction Behaviors,
- It is stated that cyberloafing behaviors are shown due to Internet Addiction.

1. RESEARCH METHODOLOGY

1.1. Purpose and Importance

It is aimed to conduct a research on healthcare professionals to examine whether there is a significant relationship between nomophobia and cyberloafing. The importance of this research is to examine the relationship between Nomophobia and cyberloafing in business life, to see its effect on work and to set an example for taking precautions.

Is there a relationship between nomophobia behavior and cyberloafing behavior in healthcare organizations? How is this relationship in terms of the variables analyzed in the study?

1.2. Population and Sample

Nomophobia and cyberloafing scale was administered to health care workers working in City Training and Research Hospital and Medline Hospital located in the Health Service Region of

Adana province. The population of the study consisted of a total of 489 employees working in two hospitals, one private and one public hospital.

1.3. Data Collection Tool

A simple random sampling method was used to select participants. The Nomophobia Questionnaire (NMP-Q) and a validated Cyberloafing Scale were administered. Reliability analysis confirmed high internal consistency for both instruments (Cronbach's alpha > 0.94). Statistical analyses included Spearman correlation, Mann-Whitney U, and Kruskal-Wallis tests.

As the first scale; (Nomophobia Scale), the 30-item Nomophobia Questionnaire (NMP-Q) developed by Yildirim and Correira and prepared in the form of a 7-point Likert scale was used to measure individuals' smartphone addiction.

As the second scale, the cyberloafing scale created by Lim (2002) and later developed by Henle and Blanchard (2008) was used with a five-point Likert scale. Regarding its adaptation into Turkish, Örücü and Yıldız (2014) conducted a validity and reliability analysis and the scale consists of 20 questions to measure cyberloafing behaviors in a two-factor structure of important and unimportant (Blanchard vd, 2008) (Öncü vd, 2014). Cronbach's alpha value was determined as 0.88. The scale consists of 12 items. The scale is in five-point Likert type as "Never-0", "Once/twice-1", "Sometimes-2", "Often-3", "Most of the time-4". This study was conducted in accordance with the principles of the Declaration of Helsinki.

1.4. Method of Analysis

SPSS 22.0 statistical package program was used to analyze the data. The intensity of the demographic information of the participants was analyzed with frequency and percentage distribution. Cronbach's Alpha coefficients were found.

In order to determine the accuracy of the hypotheses prepared for the study, Correlation Test was used to calculate the relationship between dependent and independent variables. Since the data obtained in the public and private sector comparisons of the results did not conform to the normal distribution, Mann Whitney U Test was used for pairwise group comparisons and Kruskal Wallis Analysis of Variance test was used for more than two group comparisons.

1.5. Ethical Aspects of the Research

Ethics committee permission dated 23.10.2019 and numbered decision no-3 was obtained from Istanbul Arel University Ethics Committee for the realization of the study. Then, permission was

obtained from the Provincial Health Directorate in the region in question on 01.02.2020. Participants were provided to answer the questionnaires through the voluntary consent form.

2. ANALYSIS

The findings obtained from the data obtained in the study were interpreted.

Table 1. Distribution of Demographic Characteristics of Participants

Demographic Variables	Groups	Number	Percentage (%)
Hospital	City Hospital	324	66,3
	Medline Hospital	165	33,7
	Total	**489**	**100,0**
Gender	Male	266	54,4
	Woman	223	45,6
	Total	**489**	**100,0**
Marital Status	Married	265	54,2
	Single	224	45,8
	Total	**489**	**100,0**
Profession	Physician	30	6,1
	Dentist	10	2,0
	Pharmacist	33	6,7
	Health Officer	51	10,4
	Health Administrator	17	3,5
	Responsible Nurse	30	6,1
	Nurse/Midwife	169	34,6
	Technician	37	7,6
	Other Health Personnel	54	11,0
	Other Personnel	58	11,9
	Total	**489**	**100,0**
Age	18-24 years old	47	9,6
	25-34 years	212	43,4
	35-44 years	153	31,3
	45-49 years	65	13,3
	50 years and older	12	2,5
	Total	**489**	**100,0**

Working Time	0-5 years	203	41,5
	6-10 years	98	20,0
	11-15 years	101	20,7
	16-20 years	40	8,2
	21-25 years	33	6,7
	26 years and above	14	2,9
	Total	**489**	**100,0**
Income Status	1600-2499	111	22,7
	2500-3499	67	13,7
	3500-4499	61	12,5
	4500-5499	143	29,2
	5500 and above	107	21,9
	Total	**489**	**100,0**

324 of the respondents (66.3%) from Public Hospital and 165 (33.7%) from Private Hospital. Employees in public hospitals exhibited higher levels of nomophobia compared to those in private hospitals. This could be attributed to stricter institutional policies in public hospitals, causing staff to depend more heavily on personal smartphones for communication and information during breaks or off-duty moments (Table.1).

266 (54.4%) of the employees were male and 223 (45.6%) were women and 265(54.2%) were married and 224 (45.8%) were single. It is seen that the majority of the study population is male and married. Single participants showed significantly higher scores in both nomophobia and cyberloafing. This may be due to increased social media engagement or fewer domestic responsibilities compared to married individuals, leading to greater smartphone attachment and online activity during work (Table.1).

Survey respondents 30 are Medical Doctors, 10 are Dentists, 33 are Pharmacists, 51 are Health Officers, 17 are Health Administrators, 30 are Charge Nurses, 169 are Nurses/Midwives, 37 are Technicians, 54 are Other Health Personnel and 58 are Other Personnel. 18-24 years old those in group 47 (9.6%), 212 (43.4%) in the 25-34 age group, and 212 (43.4%) in the 35-44 age group those in group 153 (31.3%), 45-49 years those in group 65 (13.3%) and 50 years and older Those who were not were 12 (2.5%) (Table.1).

Those who have been working in the organization for 0-5 years 203 (41.5%), 6-10 years between 11-15 years, 98 (20.0%), 11-15 years between 101 (20.7%), 16-20 years between 40 (8.2%), those between 21-25 years 33 (6.7%) and 14 (2.9%) employees with 26 years and above. Participants with 16–20 years of service displayed the highest levels of both behaviors. A potential reason is occupational fatigue or burnout, which might drive experienced employees to disengage through digital means such as excessive smartphone use (Table.1).

When we look at the income distribution of the surveyed personnel; 1600-2499 111 (22.7%) of those with an income of TL. 111 (22.7%), 67 (13.7%) of those with an income of 2500-3499, 61 (13.7%) of those with an income of 3500-4499 (12.5%), 143 (29.2%) with incomes between 4500-5499 and 5500 and above 107 (%) of those with income 21.9) personnel. Higher-income employees showed significantly elevated levels of both behaviors. One explanation could be that higher-income individuals are more likely to own advanced smartphones, increasing both dependency and potential for distraction (Table.1).

Table 2. Reliability Tests of Nomophobia and Cyberloafing Scales

Cronbach's Alpha Value		
Nomophobia Scale (N=27)	**Virtual Shirking Scale (N=13)**	**Both Scales (N=40)**
0,97	0,94	0,97

Scale based on alpha coefficient;

- 0.00 <α< 0.40 is not reliable,
- If 0.40 <α< 0.60, reliability is low,
- 0.60 <α< 0.80 is highly reliable,
- 0.80 <α< 1.00 is highly reliable. Based on the results in the table, it is concluded *that the* nomophobia and cyberloafing *scale is highly reliable* (Table.2).

According to the results of the Mann Whitney U Test conducted to determine whether there is a difference in paired groups according to the mean scores of nomophobia and cyberloafing obtained from the applied questionnaires (since they do not show normal distribution), it is seen that employees working in public hospitals experience more anxiety about being away from the phone in terms of nomophobia scale and there is a significant difference (p=0.009). In addition, it is seen that single employees working in both hospitals experience more nomophobia anxiety and spend more free time in terms of cyberloafing (p=0.005) (Table.3).

Table-3. Mann Whitney U Test Results for Nomophobia Score and Cyberloafing Score

		Nomophobia Scale Test Value			Virtual Shirking Scale Test Value		
Groups	**Number**	**Row Mean.**	**U**	**p**	**Row Mean.**	**U**	**p**
City Hospital	324	256,97	22853,0	**0,009***	250,54	24934,0	0,222
Medline Hospital	165	221,50			234,12		
Total	**489**						
Male	266	252,17	27751,0	0,219	247,91	28885,5	0,618
Woman	223	236,44			241,53		
Total	**489**						
Married	265	228,51	25310,5	**0,005***	228,39	25279,5	**0,005***
Single	224	264,51			264,65		
Total	**489**						

Table 4. Kruskal Wallis H Test Analysis Results in Terms of Nomophobia Score and Cyberloafing Score

		Five Factor Personality Traits Test Value			Workplace Incivility Test Value		
Groups	**Number**	**Queue Ort.**	**Chi-Square**	**p**	**Row rows Ort.**	**Chi-Square**	**p**
Physician	30	223,02	10,241	0,331	281,17	10,083	0,344
Dentist	10	284,40			264,10		
Pharmacist	33	290,14			264,48		
Health Officer	51	220,82			206,50		
Health Administrator	17	263,03			240,53		
Responsible Nurse	30	286,57			286,70		
Nurse/Midwife	169	244,59			237,61		
Technician	37	241,43			239,07		
Other Health Per.	54	228,26			254,56		
Other Personnel	58	237,44			241,92		
Total	**489**						
18-24 years old	47	246,96	1,43	0,839	241,30	0,202	0,995
25-34 years	212	247,04			245,41		
35-44 years	153	240,36			246,12		
45-49 years	65	254,93			246,60		

50 years and older	12	206,67			229,29		
Total	**489**						
0-5 years	203	256,24	15,261	**0,009***	252,16	15,545	**0,008***
6-10 years	98	244,29			252,76		
11-15 years	101	242,63			248,95		
16-20 years	40	277,10			266,83		
21-25 years	33	185,20			181,42		
26 years and above	14	153,36			145,96		
Total	**489**						
1600-2499	111	213,14	15,608	**0,004***	228,77	15,594	**0,004***
2500-3499	67	228,20			211,10		
3500-4499	61	223,84			242,58		
4500-5499	143	263,50			242,10		
5500 and above	107	275,90			288,32		
Total	**489**						

According to the results of the Kruskal Wallis H Test conducted to determine whether there is a difference in the comparisons of more than two groups according to the mean scores of nomophobia and cyberloafing obtained from the applied questionnaires, it is seen that the employees with 16-20 years of service in both hospitals experience nomophobia and cyberloafing more than the other groups (p=0.009 and p=0.008) (Table.4).

In addition, nomophobia and cyberloafing behavior increased as the income level of the staff increased (p=0.004) (Table.4).

Table 5. The Relationship between Nomophobia and Cyberloafing

			Nomophobia Score	Virtual Slacking Score
Spearman's rho	Nomophobia Score	Correlation Coefficient		0,684**
		Sig. (2-tailed)		,000
	Virtual Slacking Score	Correlation Coefficient	0,684**	
		Sig. (2-tailed)	,000	
** Correlation is significant at the 0.01 level (2-tailed).				

The correlation analysis conducted to analyze the relationship between nomophobia and cyberloafing score is given in Table-5. Since the nomophobia and cyberloafing scores obtained from the questionnaire did not show normal distribution characteristics, Spearman Correlation analysis was performed. The analysis shows that there is a positive, strong and significant relationship between nomophobia and cyberloafing (r=0.684, p=0.000). As nomophobia behavior increases, cyberloafing behavior also increases (Table.5).

- A strong, positive correlation was found between nomophobia and cyberloafing ($r = 0.684$, $p = 0.000$).
- Public sector employees exhibited higher nomophobia than those in the private sector ($p = 0.009$).
- Single participants reported higher levels of both nomophobia and cyberloafing compared to married participants ($p = 0.005$).
- Healthcare workers with 16-20 years of experience and higher income levels showed increased levels of both behaviors.

3. DISCUSSION

These findings align with prior studies that suggest smartphone dependency can negatively impact work engagement. For instance, Güler et al. (2019) and Kocabaş & Korucu (2018) noted that increased smartphone usage was linked with higher distractions and lower productivity. The study adds to this literature by identifying specific demographic factors that amplify these behaviors, such as marital status and professional seniority. Similarly, Erdem et al. (2017) emphasized that individuals experiencing nomophobia often display reduced cognitive focus, which may indirectly contribute to behaviors like cyberloafing.

Moreover, the strong correlation between nomophobia and cyberloafing suggests that digital dependency may lead individuals to engage more frequently in non-work-related online activities during working hours, potentially affecting the quality of healthcare services.

In the study, it was found that there was a significant difference between occupation and work intensity and work shirking rate. In another study, although there was no difference in the scores of virtual addiction according to gender and age, it was found that there was a difference in terms of the frequency of smartphone use and the time of first use of the smartphone. In another

study, it was found that although there was no difference in the scores of virtual addiction according to gender and age, there was a difference in terms of the intensity of spending time with the smartphone and the time of first use of the smartphone (Kocabaş vd, 2018).

Research by Özüdoğru and Yıldırım (2020) also supports the notion that cyberloafing is a coping mechanism often triggered by stressors such as digital addiction or workplace dissatisfaction. In healthcare settings, where continuous alertness and efficiency are crucial, such behaviors can significantly affect service delivery quality.

Additionally, Lim (2002) and Blanchard (2008) argued that organizational culture and lack of monitoring systems may facilitate cyberloafing. Our findings further show that marital status and longer professional experience may contribute to increased susceptibility to nomophobia, which in turn escalates cyberloafing tendencies.

Furthermore, studies such as those by Panova and Carbonell (2018) have shown that the psychological effects of excessive smartphone usage—including stress, anxiety, and attention deficits—can exacerbate tendencies toward digital distraction. These effects are particularly problematic in healthcare, where attention to detail is paramount. Similarly, Montag et al. (2021) emphasized the role of personality traits, suggesting that individuals high in neuroticism or low in conscientiousness are more prone to smartphone dependency, which may lead to problematic work behaviors such as cyberloafing.

From an organizational perspective, researchers such as Andreassen et al. (2017) suggest that perceived organizational justice and employee engagement levels play a moderating role in the relationship between nomophobia and workplace deviance. A lack of supportive workplace culture may drive employees to use smartphones excessively as a form of disengagement or escape.

This study enhances the existing literature by revealing how behavioral and demographic factors jointly influence technology-related workplace distractions in healthcare environments. In doing so, it highlights the urgent need for workplace interventions targeting both technological literacy and employee well-being.

Conclusion The present study confirms that nomophobia significantly predicts cyberloafing behaviors among healthcare workers. This relationship is strongly influenced by demographic variables such as marital status, professional experience, and income level, but not

by age or gender. The correlation suggests that as mobile phone dependency increases, so does the likelihood of engaging in non-work-related digital activities during working hours.

To mitigate these risks, healthcare institutions must develop targeted intervention programs that address the root causes of digital dependency, and foster a more focused and productive work environment.

4. CONCLUSIONS

This study concludes that nomophobia is a significant predictor of cyberloafing among healthcare workers. The relationship is influenced by marital status, professional role, income, and years of experience, but not by age or gender. These findings indicate a need for targeted policies and digital wellness programs within healthcare institutions.

According to the Mann Whitney U Test results used to test the difference between the paired groups according to the mean scores of nomophobia and cyberloafing obtained from the applied questionnaires (since they did not show normal distribution), it is seen that the employees working in public hospitals have more anxiety about being away from the phone in terms of nomophobia scale and there is a significant difference (p=0,009). In addition, it is seen that single employees working in both hospitals experience more nomophobia anxiety and spend more free time in terms of cyberloafing (p=0.005).

According to the results of the Kruskal Wallis H Test conducted to test whether there is a difference in the comparisons of more than two groups according to the mean scores of nomophobia and cyberloafing obtained from the applied questionnaires, it is seen that the employees with 16-20 years of service in both hospitals experience nomophobia and cyberloafing more than the other groups (p=0.009 and p=0.008).

In addition, nomophobia and cyberloafing behavior increased as the income level of the staff increased (p=0.004).

Since nomophobia and cyberloafing scores obtained from the questionnaire did not show normal distribution characteristics, Spearman Correlation analysis was performed. In the analysis, it was observed that there was a positive, strong and significant relationship between nomophobia and cyberloafing (r=0.684, p=0.000). As nomophobia behavior increases, cyberloafing behavior also increases.

As a result of the research, the effect of nomophobia on cyberloafing in the workplace of employees in the field of health did not vary according to age, marital status, gender, but it varied according to professions (nursing, clerical, secretarial, technician) and a significant difference was found.

Recommenddations

Healthcare organizations should conduct structured training programs to raise awareness about nomophobia and its negative implications for workplace productivity and professional focus. These programs should target not only general staff but also specific groups such as single employees and those with higher incomes, as these groups reported higher levels of nomophobia and cyberloafing.

The implementation of digital hygiene policies-including designated smartphone usage times, phone-free zones, and workplace internet use protocols-can help minimize excessive mobile phone usage during work hours. These policies may be particularly beneficial in public hospitals, where nomophobia scores were significantly higher.

Psychological counseling and organizational support mechanisms should be made available for employees displaying high nomophobia tendencies. In particular, those with 16–20 years of experience may benefit from burnout prevention programs, as this group showed elevated levels of both nomophobia and cyberloafing.

Human resources departments should assess institutional communication practices to reduce over-reliance on personal mobile phones. The adoption of secure, internal communication platforms may serve as an alternative and help limit nomophobia-related stress.

Future research should explore intervention models (e.g., digital detox programs, behavior modification techniques) and assess the long-term effects of smartphone dependency on professional performance, particularly in healthcare environments where attention and accuracy are critical.

Studies should also examine organizational factors-such as perceived justice, leadership style, and work engagement-as potential mediators or moderators in the relationship between nomophobia and cyberloafing, which can provide deeper insight into managing digital behavior in professional settings.

Author Statement

Statement of Research and Publication Ethics

This study was prepared in accordance with the rules of scientific research and publication ethics.

Author Contributions

The authors contributed equally to the study.

Conflict of Interest

The authors declare no conflict of interest.

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JHMT Editorial

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Understanding the Roots of Violence Against Health Workers: A Case Study from a Turkish Public Hospital [a]

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Abstract

Violence against healthcare professionals has become a growing global concern, posing serious threats not only to the well-being of individual practitioners but also to the quality and sustainability of healthcare systems. In countries like Turkey, despite the implementation of legal regulations and institutional measures, such incidents continue to rise—especially in public hospitals where overcrowding, staff shortages, and heightened patient expectations intersect. Contributing factors include long waiting times, communication breakdowns, and limited public understanding of medical procedures. This study investigates the root causes of violence in healthcare by examining both victim and perpetrator perspectives. Conducted at Ordu University

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Training and Research Hospital, it involved structured interviews with 60 participants: 30 healthcare professionals (15 physicians, 10 nurses, and 5 allied health workers) who experienced violence, and 30 individuals who had committed such acts. Among healthcare workers, 18 were women and 12 were men; among perpetrators, 11 were women and 19 were men. By incorporating both sides, the study provides a more holistic view of the interpersonal tensions and institutional shortcomings that fuel violence in clinical settings. It also explores how variables such as gender, age, professional role, education, previous exposure to violence, and workplace unit influence these incidents. The findings aim to inform preventive strategies and policy interventions, offering a deeper understanding of a persistent public health issue.

Keywords: Violence in healthcare, workplace aggression, root causes, qualitative research, patient-provider relationship, healthcare safety, Turkey

INTRODUCTION

Workplace violence in healthcare settings has emerged as a critical global issue, threatening not only the physical and psychological well-being of healthcare professionals but also the quality of care delivery. According to the World Health Organization (WHO), violence encompasses the intentional use of physical force or power that results in or has a high likelihood of resulting in injury, psychological harm, or deprivation. Incidents of violence against healthcare workers are increasing worldwide and are particularly alarming in countries undergoing health system transformation, such as Turkey (World Health Organization, 2002).

In Turkey, national data and media reports have highlighted a steady rise in verbal and physical assaults on healthcare personnel. In response, institutional mechanisms such as the White Code ("Beyaz Kod") system have been implemented. The White Code is an emergency protocol designed to provide immediate legal and institutional protection for healthcare workers facing violence. Despite these interventions, the persistence of violent incidents points to deeper systemic and psychosocial factors that require examination (Toker & Kılınç, 2021; Ministry of Health, 2020).

While prior research has primarily focused on the experiences of healthcare workers, this study adopts a dual-perspective approach by also incorporating the voices of perpetrators. Understanding the motivations and contextual triggers from both sides allows for a more nuanced understanding of the phenomenon and supports the development of more effective preventive strategies.

Theoretical Framework

This study employs an integrated theoretical approach to analyze the multifaceted nature of violence in healthcare settings. Two prominent models guide the interpretation of the findings (Glanz, Rimer, & Viswanath, 2015):

Bronfenbrenner's Ecological Systems Theory

This model conceptualizes human behavior within nested environmental systems, offering a structured framework to examine how individual, relational, organizational, and societal factors interact to influence workplace violence. Applied to this study, the framework includes:

- Microsystem: Individual traits and direct interactions (e.g., stress levels, attitudes).
- Mesosystem: Relationships between patients, families, and healthcare workers.
- Exosystem: Institutional structures, hospital policies, and working conditions.
- Macrosystem: Cultural norms, societal attitudes toward health workers, and legal frameworks (Bronfenbrenner,1979).

Karasek's Job Demand-Control Model

This model emphasizes that high job demands combined with low decision-making autonomy and insufficient social support create an environment conducive to occupational stress. When stress exceeds coping capacity, interpersonal tensions may escalate into violence. Together, these frameworks offer a comprehensive lens to understand how violence arises not merely from isolated incidents, but through interconnected systems and stressors (Karasek,1979).

1. RESEARCH METHODOLOGY

1.1. Research Design

A qualitative case study approach was adopted to provide an in-depth understanding of workplace violence in a real-life context. This methodology is particularly suitable for capturing complex human experiences and organizational dynamics.

1.2. Sampling Strategy

A convenience sampling method was used due to the ethical and practical limitations of accessing perpetrators. Participants were selected from Ordu University Training and Research Hospital based on their involvement in violence-related incidents reported between 2018 and 2023. The final sample included:

• 30 healthcare workers (doctors, nurses, and administrative staff) who experienced violence.
• 30 perpetrators (patients or patient relatives) who admitted to aggressive behavior.
All participants were informed of their rights, and participation was voluntary. Informed consent was obtained. Ethical approval was granted by the Ordu University Ethics Committee (Decision No: 2022-220).

1.3. Data Collection

Semi-structured interviews were conducted by trained researchers via telephone. Each interview lasted approximately 10–15 minutes. The interview guide included open-ended questions related to causes, emotional responses, and systemic observations about the incident.

1.4. Data Analysis

The data were analyzed using thematic content analysis. Codes were developed both inductively (emerging from the data) and deductively (informed by the theoretical frameworks). To ensure inter-coder reliability, a subset of transcripts (20%) was coded independently by two researchers, and discrepancies were discussed until consensus was reached. NVivo software was used for data organization.

Figure 1. Ecological Representation of Violence Against Healthcare Workers

MACROSYSTEM (Cultural norms, media discourse, health policies)
↓
EXOSYSTEM (Hospital staffing, shift workload, resource limitations)
↓
MESOSYSTEM (Patient–provider communication, family–staff dynamics)
↓
MICROSYSTEM (Individual stress, anxiety, job fatigue, emotional reactions)

This figure illustrates how violence emerges through systemic interaction—from individual-level stress to broader institutional and societal influences.

1.5. Ethical Approval

Ethical approval for the study was obtained from the Ordu University Social and Human Sciences Research Ethics Committee on 24 November 2022, decision number 2022-220.

2. ANALYSIS

2.1. Perspectives of Healthcare Workers

Four major themes were identified from the interviews with healthcare workers:

Table 1. Themes and Sub-Themes Identified by Healthcare Workers

THEME: RULE VIOLATIONS

- **LACK OF PATIENT EDUCATION**
- **NON-COMPLIANCE WITH HOSPITAL RULES**

THEME: DISSATISFACTION

- **NEGATIVE PERCEPTION OF TREATMENT**
- **MEDICATION COMPLAINTS**

THEME: TIME PRESSURE

- **LONG WAITING TIMES**
- **IMPATIENCE**

THEME: COMMUNICATION ISSUES

- **POOR EXPLANATIONS**
- **LACK OF EMPATHY**
- **HARSH LANGUAGE**

SampleQuotations:

• (P4) “The patient’s relative insisted on being seen without an appointment and began shouting when refused.”

• (P7) “I warned him about smoking in the ward, and he started insulting me.”

2.2. Perspectives of Perpetrators

Four corresponding themes were derived from interviews with perpetrators:

Table 2. Themes and Sub-Themes Identified by Perpetrators

Theme: Anxiety and Stress

- Fear of misdiagnosis
- Panic in emergencies

Theme: Communication Gaps

- Use of technical jargon
- Lack of information

Theme: Lack of Compassion

- Feeling ignored
- Insensitive behavior

Theme: Environmental Pressure

- Overcrowding
- Long waits
- Understaffing

Sample Quotations:

• (P13) "I asked for water and was told rudely to leave. I lost my temper."

• (P17) "We had been waiting for hours. I felt helpless and reacted harshly."

3. DISCUSSION

The dual-perspective approach adopted in this study revealed how healthcare violence is deeply rooted in both interpersonal miscommunication and systemic constraints. Themes such as dissatisfaction and communication issues were consistent with previous findings (Özişli, 2022; Deniz & Yüksel, 2020). However, the inclusion of perpetrators added a critical and rarely explored dimension—many perceived their actions as reactions to provocation, neglect, or desperation.

The integration of Bronfenbrenner's Ecological Systems Theory enabled a holistic understanding of violence by connecting individual experiences to broader organizational and societal dynamics. Karasek's Job Demand-Control Model further helped interpret how stress from high job demands, limited autonomy, and lack of support can intensify conflicts between patients and providers.

The study's findings align with international literature emphasizing that insufficient staffing, long wait times, and communication breakdowns are primary precursors to violence (Lanctôt & Guay, 2014; Arnetz et al., 2015). These systemic problems are not unique to Turkey, reflecting a global challenge requiring policy-level intervention.

What distinguishes this study is its ethical inclusion of perpetrators, shedding light on the perceived justifications and emotional triggers behind their actions. Their accounts underscore how feelings of helplessness, environmental stress, and disrespect can escalate into aggression.

These findings point to the need for comprehensive strategies beyond punitive measures. Institutional reforms that enhance communication, improve working conditions, and reduce

waiting times could prove more effective in preventing violence than increasing physical security alone.

4. CONCLUSIONS

Violence against healthcare professionals is a multifaceted problem requiring multidimensional interventions. Based on the findings:

- Implement staff communication and empathy training
- Increase security personnel and surveillance in high-risk areas
- Improve working conditions and reduce waiting times
- Enforce and promote the “White Code” system
- Design public campaigns to reshape perceptions of health workers

Limitations

- The study was limited to a single hospital
- Interviews were relatively short (10–15 min)
- The findings are not generalizable, but they are transferable to similar contexts

Conflicts of Interest: The authors report that there are no competing interests to declare.

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ANNEX 1: Interview Questions

Questions to ask the person exposed to violence:

Can you tell us about the case of violence you have experienced and what, in your opinion, was the main reason for this violence?

What kind of physical or psychological damage did you suffer after being subjected to violence?

After experiencing violence, did you quit your job, continue working, file a complaint with the judicial authorities, or take any other action?

What did your friends and your organization do during or after the violence?

What were the administrative and judicial consequences of the violence?

What do you think should be done legally, institutionally and individually to stop the violence and do you have anything to add?

Demographic questions:

Age, Gender, Education, Occupation, Have you been subjected to violence before?

Unit of Employment

Questions to ask the perpetrator:

Can you tell us how the violence happened and what you think was the main cause of the violence?

How did you feel physically or psychologically after the violence?

How did health workers and the health facility treat you during or after the violence?

What were the administrative and legal consequences of the violence?

What do you think should be done legally, institutionally and individually to stop the violence and do you have anything to add?

How could you solve the problem other than violence, how would you behave if it happened again on the same day?

Demographic questions:

Age, gender, education, occupation, have you been involved in violence before?

Has he/she been punished for violence?

ANNEX-2

Coding of health workers exposed to violence

	Sex	**Profession**		**Sex**	**Profession**
K1	Female	Physician	**K16**	Male	Physician
K2	Male	Physician	**K17**	Female	Physician
K3	Female	Physician	**K18**	Female	Physician
K4	Female	Physician	**K19**	Female	Physician
K5	Female	Physician	**K20**	Female	Nurse
K6	Female	Nurse	**K21**	Female	Physician
K7	Female	Nurse	**K22**	Female	Physician
K8	Male	Memur	**K23**	Male	Nurse
K9	Male	Memur	**K24**	Female	Security Guard
K10	Male	Nurse	**K25**	Female	Midwife
K11	Female	Physician	**K26**	Female	Physician
K12	Male	Nurse	**K27**	Male	Physician
K13	Male	Physician	**K28**	Female	Midwife
K14	Female	Nurse	**K29**	Male	Physician
K15	Female	Nurse	**K30**	Male	Health Technician

Coding Violent Individuals

	Sex	**Profession**		**Sex**	**Profession**
K1	Male	Not running	**K16**	Male	
K2	Male	Retired	**K17**	Female	Retired
K3	Female	Not running	**K18**	Female	Not running
K4	Male	Private Sector Employee	**K19**	Female	Not running
K5	Male	Private Sector Employee	**K20**	Male	Retired
K6	Female	Not running	**K21**	Female	Not running
K7	Male	Public Employee	**K22**	Male	Public Employee
K8	Male	Private Sector Employee	**K23**	Male	Private Sector Employee
K9	Male	Retired	**K24**	Male	Not running
K10	Male	Retired	**K25**	Male	Private Sector Employee
K11	Female	Not running	**K26**	Male	Private Sector Employee
K12	Male	Public Employee	**K27**	Female	Not running

K13	Male	Private Sector Employee	**K28**	Female	Not running
K14	Female	Not running	**K29**	Male	
K15	Female	Retired	**K30**	Male	

Note: 3 of the participants could not be reached

ANNEX-3

Responses to the interview with the health worker subjected to violence

QUESTION 1: Could you tell us about the case of violence you experienced and what you think was the main cause of the violence?

K1: '*The patient's relative asked me to prescribe medication without bringing the patient, I refused, an argument ensued.'*

K2-K11-K26-K27-K28: '*The patient wanted to be seen without waiting in line.*

K3-K14: '*The patient said that he did not like the treatment and started insults.'*

K4-K9-K29-*K6-K7*: *'The patient's relatives said they had waited too long and started shouting.'*

K5-K30*: 'He/she asked for an irregular report and when it was denied, he began to insult.*

K10: *'He got angry because there was no water in the hospital, and when I asked him to come out, he started threatening me.'*

K12: *'He thought the treatment was inadequate and started an argument.'*

K13: *'He/She asked why I had discharged her child and argued that she had been discharged early.'*

K15: *'He/she didn't like the medicine he was given and brought it back, I didn't accept it and we got into an argument.'*

K16: *'I warned the patient's relative about smoking in the ward, he started shouting and insulting me.'*

K17: *'There were too many attendants in the ward (3) and when I asked them to come out, they were disrespectful and started insulting me.'*

K18: *'While I was examining the patient, he came into my room and asked me to adjust the dosage of the medication, and when I refused, he started yelling.*

K8-K19-K21: '*He/she wanted to be examined without an appointment and an argument broke out when he was refused.'*

K20: '*The patient on the floor said he did not like the vascular access and began to insult.'*

K22-K24: '*The patient's relatives were disrespectful'.*

K23: '*The patient was drunk and began to insult and threaten.'*

K25: '*I warned him that the treatment was being interfered with and an argument ensued.'*

QUESTION 2: What kind of physical or psychological damage have you suffered after experiencing violence?

K1-K2-K4-K10-K13: 'Sleep and anxiety disorders, stress'

K3-K11-K12-K14-K15-K17-K28-K30: 'Low morale and lack of motivation'

K5-K8-K9-K16-K21-K23-K27: '*I have a feeling I am at the end of my rope'*

K6-K7-K24-K26: '*I'm scared'*

K18-K22-K25: '*My work was interrupted and I became anxious'*

K19-K20-K29: '*I was humiliated'.*

QUESTION3: Did you have any reactions after being subjected to violence, such as quitting or resuming work, reporting to legal authorities, or other reactions?

All the health workers went to the judicial units and filed a public complaint, demanding that the other party be punished.

QUESTION 4: What did your friends and your organization do at the time of the violence or after the violence?

All health workers reported that they received encouragement, protection and moral support from their organizations and friends.

QUESTION 5: What was the administrative and judicial outcome of the violence? All the health workers said that the public processes are still ongoing.
QUESTION6: What do you think should be done legally, institutionally, and individually to end violence, and do you have anything to add? K1-K3-K4-K7-K8-K12-K13-K14-K19-K23: '*It needs to be dissuasive and needs to be punished harshly.'* K2-K9-K10-K11-K17-K19-K24: '*More emphasis should be placed on education, and it should be taught from childhood that violence is not a solution.* K5-K16-K18: '*Security measures in hospitals should be strengthened'* K6-K15-K21-K22: '*Health workers should not be discredited in the media, and their dignity should be protected'* K25-K28-K29: '*The number of health care workers should be increased, and the number of hospitals should be increased.'* K26-K27-K30: '*Health workers should not work long hours, working hours should be reduced'*

Responses to the Interview with Perpetrators of Violence

QUESTION 1: Could you tell us about the case of violence you realized and what was the main cause of the violence in your opinion? K1*: 'I could not bring my patient, I asked the doctor to prescribe the medication and explained my situation, when he refused, we argued, he could have been more tolerant.'* K2-K11-K26-K27-K28: *'I had taken time off work, I didn't have time, it was our turn, I asked him to come in and examine me, he said he took turns, we argued.'* K3-K14-K12-K15-K20-K25: *'I warned him/her because I found the treatment inadequate, I realized that he was hurting the patient a lot when he gave him an injection, he reacted harshly and we had an argument.'*

K4-K9-K6-K7: *'I thought the patient's intervention was too late, we were kept waiting too long, I warned, and an argument broke out.'*

K5: *'I asked for a report stating that I could not go to work because I was sick, the doctor refused and I got angry, an incident broke out'.* K10: *'I asked for water for my patient and was harshly told 'there is no water' I got angry, they asked me to leave and we started arguing'* K13: *'My child had a fever and they discharged us before the fever went down, I got angry and told them we would not be discharged and an argument ensued. '* K17: *'He said there were too many people in the patient's room and tried to take us out harshly, we argued.'* K18: *'I went into the doctor's room and asked him to adjust the medication, he sternly asked me to come out and we argued.'* K8-K19-K21: *'Physician randevumuz olmadığını söyleyip muayene etmedi ve tartışma çıktı'* K22-K24: *'They said I didn't follow hospital rules in the ward and kicked me out, we argued'*
QUESTION 2: What physical or psychological damage did you suffer as a result of the violence? K1-K2-K3-K10-K19: '*I have a feeling that I have taught a lesson, I have a feeling of relief.'* *K4-K11-K12-K13-K14-K17-K27: 'Remorse, guilt'* *K5-K7-K9-K22-K24-K28: 'I have no regrets, I am sure that I will be the winner of the case.'* *K6-K8-K23-K26: 'I had no feeling. I had no feeling.'* *K18-K21-K25: 'I haven't seen any harm'* *K15-K20: 'I'm depressed, I've had a bad day'*
QUESTION3: How did health workers and the health facility treat you during or after the violence?

Some of the participants said that other health workers came to the scene and tried to calm them down by saying that it was a misunderstanding, while others said that they were taken out and removed by security forces.

QUESTION4: What was the administrative and judicial outcome of the violence case? Participants indicated that they were aware that a lawsuit had been filed and that the lawsuit was ongoing.
QUESTION5: What do you think should be done legally, institutionally and individually to end violence and do you have anything to add? The majority of the participants think that the number of hospitals and health workers is insufficient and that their number should be increased and that the necessary care and sensitivity should be given to the patients and their relatives. Hospitals should be safer, cleaner, airier and more comfortable places.
QUESTION6: Other than violence, how would you solve the problem if it happened again on the same day? K1-K2-K3-K10-K19-K25: *'I would do it again, I don't think I did anything wrong.'* K5-K7-K9-K20-K22-K24-K28: *'I think we could have spoken better, there was a lack of communication or misunderstanding.'* K4-K11-K12-K13-K14-K17-K27: *'I was very nervous at that moment, we could not find a place to sit because the hospital was very crowded, I was tired and had a headache, I could have been calmer, hospitals should be more airy, light, clean and comfortable.'* K6-K8-K26: *'I came to the hospital on vacation from work, I had no time, I had to do my work as soon as possible and go, we should not wait too long in the hospital.'* K15-K18-K21-K23-K26: *'There should not have been a late intervention, I think I am right, I expect health workers to be more discreet'*

Table 1. Main theme, sub-themes and codes of root causes of health-related violence

Main Theme	Sub-theme	Code
Rulelessness		
	Lack of Health Literacy	Patients and their relatives requesting unlawful reports and medication
	Lack of Patient Rights Information	Failure to comply with escort and hospital rules
	Lack of Laws	Requesting to be examined without queuing and without an appointment
	Lack of Audit	Trying to prescribe medication without bringing the patient to the hospital
	Sufficient Staff Absence	Smoking inside the hospital
		Not enough medical secretaries to manage the queue system
Dissatisfaction		
	From the Medical Procedure Dissatisfaction	Relatives of the patient trying to interfere with the treatment
	Duration of Treatment Dissatisfaction	Dislike of the medication and treatment given,
	Dissatisfaction with the medication given	Thinking that he/she was discharged early even though his/her treatment was not finished
	Health Worker From their statement Dissatisfaction	Disliking medical interventions such as intravenous lines, injections, etc.
		Explanations about the diagnosis and treatment process are either non-existent or unsatisfactory
The Time		
	Impatience	Feeling kept waiting too long and not intervened in time

	Excessive waiting before treatment	Perception that the problems arising from the system are caused by the health worker
	Long appointment times	
Lack of communication		
	The patient and his/her relatives are tense and stressed	Disrespect to health workers
	Health workers do not have enough time for communication	The patient and his/her relatives preferring the wrong style
	Lack of open communication channels	Speaking in a threatening and provocative language

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Mapping the Evolution of Andersen's Behavioural Model in Healthcare: A Bibliometric Analysis

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Abstract

Aim: This study aimed to examine the conceptual, thematic, and temporal evolution of research applying Andersen's Behavioural Model (ABM) in healthcare.

Methods: A bibliometric analysis was conducted using the Scopus database without time or document type restrictions, focusing on English-language publications. A total of 1223 records (1976-2025) were analysed using co-word and thematic mapping with Bibliometrix and VOSviewer software.

Results: A consistent rise in publications was observed after 2008, peaking in 2022. Core study areas regarding healthcare utilisation, mental health, oral health, and access to care were identified by keyword frequency and co-word analyses. Thematic mapping uncovered specialised niches regarding cancer screening, and emerging areas regarding immigrant health, health equity. Cross-

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cutting concepts regarding oral health and socioeconomic status also emerged as significant connecting topics. Analysis of temporal mapping revealed a shifting in focus from issues related to aging to more recent priorities regarding COVID-19 and health disparities.

Conclusion: ABM remains a useful framework for directing equitable, person-centred healthcare research and policy. To improve the model's applicability within global health systems, future research should expand its application through vulnerable populations, structural determinants, qualitative approaches, and emerging public health issues.

Keywords: Andersen behavioural model, bibliometric analysis, healthcare utilisation, health equity

INTRODUCTION

Healthcare access and utilisation serve as critical indicators of a health system's responsiveness and equity (WHO, 2010). In the modern healthcare landscape, which is marked by substantial resource consumption and an emphasis on person-centred care, a needs-based system seeks to meet individuals' health needs as objectively assessed by professionals while also considering their subjective healthcare demands. Achieving this balance can reduce the risks of overutilisation, underutilisation, and inappropriate utilisation of healthcare services. On the other hand, neglecting to properly address needs could endanger personal health and put more burden on the healthcare system. To support effective and equitable service delivery, it is crucial to comprehend healthcare utilisation from the perspectives of both individual and contextual factors (Lederle et al., 2021; Babitsch et al., 2012).

Andersen's Behavioural Model (ABM) is one of the most prevalent conceptual frameworks for thoroughly addressing healthcare utilization (Andersen, 1995). The ABM has significantly shaped the analysis of healthcare disparities, access, and utilization (Alkhawaldeh et al., 2023). Since it offers important insights into shifting research priorities and informs the development of health policy, an understanding of how theoretical models' evolution and are used over time is crucial for advancing health services research (Hanney et al., 2013).

Andersen's Behavioural Model

Ronald M. Andersen, an American medical sociologist and health services researcher, developed the ABM in 1968 (Andersen, 1968). The model offers a fundamental framework for comprehending how social determinants impact individuals' interactions with health services, and it is created to explain the factors influencing healthcare access and utilisation (Andersen and

Newman, 2005). The model's original goal is to investigate ideas like "access" and "accessibility" concerning healthcare systems (Aday and Andersen, 1974; Andersen, 1995).

By conceptualizing and operationalizing access, Aday and Andersen (1974) create a coherent theoretical framework that served as the foundation for the behavioural model of health service utilisation (Andersen and Newman, 2005; Andersen, 1995). Since then, the model identifies factors that explain healthcare utilization and informs public policies that aim to reduce disparities (Holde et al., 2018). In its initial form, ABM suggested that three types of factors, *predisposing, enabling, and need factors,* determine healthcare utilization. These factors work together to affect individuals' decisions to seek and receive care (Andersen, 1968). These factors include:

- Predisposing factors include sociodemographic characteristics, personal beliefs, societal structures, and attitudes that affect an individual's propensity to seek healthcare.
- Enabling factors refer to structural or enabling conditions that affect access to healthcare, including financial resources, health insurance coverage, and the availability of social support networks.
- Need factors refer to the individual's health-related needs, encompassing both clinically assessed conditions and self-perceived health issues.

The relative importance of these factors may differ depending on the type of service; for example, hospital care is primarily determined by need and demographics, whereas dental care is more closely linked to enabling and predisposing factors. Outpatient care tends to involve a balance of all three (Andersen, 1995; Andersen and Davidson, 2013).

Theoretical Development of Andersen's Behavioural Model

The model has evolved to include more expansive dimensions. Later versions cover health system characteristics, patient satisfaction (Andersen and Newman, 2005; Andersen, 2008), personal health behaviours (e.g., smoking, toothbrushing), and health outcomes (Aday and Andersen, 1981). These extensions position health behaviours not only as outcomes but also as mediators in the relationship between service utilisation and health outcomes (Cohen et al., 2011).

To emphasise the dynamic character of healthcare utilisation and the reciprocal relationship between health outcomes and service use, the ABM is further improved to include environmental factors and feedback loops (Andersen, 1995; Andersen and Davidson, 2013). The model's fifth phase, which was created in the early 2000s, revises the delivery of medical care (e.g., provider-

patient communication) as a type of health behaviour and separates contextual factors (e.g., community-level factors, infrastructure, and population indicators) from individual-level determinants. To reflect developments in behavioural genetics and person-centred care, its most recent revisions include genetic predispositions and quality of life (Andersen and Davidson, 2013). In short, the systems-based model provides a way to understand how health outcomes are affected by individual and contextual factors, including personal health habits and service-use patterns (Andersen, 1995; Andersen and Davidson, 2013).

The 1995 revision, also known as the fourth phase, is the most widely used and cited version of the ABM in health services research. Because it covers a broad range of factors under the predisposing, enabling, need, and health behaviour domains, it is regarded as being especially comprehensive (Babitsch et al., 2012; Alkhawaldeh et al., 2023; Holde et al., 2018). However, some conceptual ambiguity persists, as factors like gender, education, and employment status are frequently classified as both predisposing and enabling components (Babitsch et al., 2012; Zardak et al., 2023; Alkhawaldeh et al., 2023). On the other hand, the model's flexible structure has facilitated its application across diverse populations, service types, and geographical contexts, which contributes to its continued relevance as a theoretical framework in health services research (Alkhawaldeh et al., 2023; Bas and Azogui-Lévy, 2022; Başar et al., 2021; Galicia-Diez Barroso et al., 2023; Heider et al., 2014; Pilotto and Celeste, 2022).

Use of Andersen's Behavioural Model in Healthcare Research

In recent years, ABM has been increasingly used beyond traditional access-focused studies. Applications include oral health (Galicia-Diez Barroso et al., 2023; Zardak et al., 2023), mental health care (Roberts et al., 2018), maternal health (Alibhai et al.,2022; Tolossa et al. 2024), immigrant healthcare utilisation (Radhamony et al., 2024; Lin et al., 2022) and changes in service access during the COVID-19 pandemic (Pujolar et al., 2022). The model has also influenced studies on the assessment of hypertension risk (Hirshfield et al., 2018), nutrition program participation (Vega et al., 2017), and healthcare equity analyses (Başar et al., 2021). Cost-related applications include studies on older adults in Germany (Heider et al., 2014), caregiver services in Korea (Kim and Kim, 2021), the impact of family physician contracts (Zhang et al., 2024), and catastrophic health expenditures (Sriram and Albadrani, 2022).

A systematic mapping of the evolution of ABM in the literature is becoming increasingly necessary due to its wide range of applications in chronic care, oral health, mental health, public

health, and health services research. Although ABM applications in specific populations or conditions have been covered in several narrative and scoping reviews (Alkhawaldeh et al., 2023; Zardak et al., 2023; Orji et al., 2020; Adigun et al., 2020; Lin et al., 2021), a comprehensive bibliometric analysis has not yet been conducted to capture the conceptual, thematic, and temporal progression of the model. Therefore, this study aims to provide a comprehensive bibliometric mapping of the conceptual, thematic, and temporal evolution of Andersen's Behavioural Model (ABM) in healthcare research. By doing so, it aims to inform future research and policy development through the identification of dominant themes, emerging areas, and existing knowledge gaps.

1. RESEARCH METHODOLOGY

1.1. Bibliometric Analysis

This study used bibliometric analysis to explore the evolution of Andersen's Behavioural Model in healthcare research. Bibliometrics enables the systematic evaluation of scientific output by mapping important components such as keywords, authors, publication trends, and thematic evolution. It provides insights into the conceptual structure of a field and supports evidence-based policy development, making it a widely used method across disciplines (Cobo et al., 2011; Tripathi et al., 2018; Martínez et al., 2015).

Bibliographic data requires preprocessing before analysis to resolve possible problems like misspellings, duplicate records, and irrelevant records. According to Cobo et al. (2012), this step is crucial for providing the accuracy and reliability of science mapping outcomes. Co-word analysis, widely used in conceptual mapping, examines the co-occurrence of keywords to uncover the conceptual structure of a research field. This method identifies main themes and subtopics by grouping related terms that frequently appear together in the literature (Börner et al., 2003; Martínez et al., 2015). Co-occurrence is the term used in bibliometric studies to describe how frequently two keywords occur together in the same publication. Visualising these relationships using a co-occurrence network allows the discovery of conceptual connections between terms (Tripathi et al., 2018).

In this study, a co-word analysis was conducted using VOSviewer as a free software to map the conceptual structure of healthcare literature related to ABM. In the resulting knowledge map, each keyword is represented by a circle, with its size proportional to the number of publications in which it appears. Keywords are grouped into colour-coded clusters that reflect

thematic proximity. Curved lines connecting the circles indicate the strength of association between keywords, and thicker lines signify stronger links. Accordingly, this visual representation enables the identification of both central, well-developed themes and more specialised, peripheral topics within the ABM research (van Eck and Waltman, 2010).

1.2. Data Extraction Process

The Scopus database was selected as the main data source for a thorough analysis of international research on Andersen's behavioural model in healthcare. While other databases like PubMed and Web of Science (WoS) are frequently used in bibliometric research, each varies in coverage, disciplinary focus, and metadata quality. PubMed lacks thorough bibliographic tagging and concentrates primarily on the life sciences, whereas Scopus and WoS are multidisciplinary scientific literature databases (AlRyalat et al., 2019; Mongeon and Paul-Hus, 2016). Comparative studies have shown that Scopus index covers more journals and includes a greater number of exclusive titles than WoS, whereas WoS is noted for its selectivity (Visser et al., 2021; Singh et al., 2021). The choice of Scopus for this analysis was supported by a preliminary search that produced 1275 publications in Scopus and 1057 publications in WoS using the same query terms. During the data extraction process, no publication year and document type restrictions were applied to comprehensively capture the relationship between ABM and healthcare literature within the Scopus database. The lexical search strategy was developed based on previous studies. The TITLE-ABS-KEY field was utilised to retrieve terms from article titles, abstracts, author keywords, and indexed keywords. Accordingly, in March 2025, the boolean expression (TITLE-ABS-KEY ("Andersen model" OR "Andersen’s Model" OR "Andersen’s behavio*ral model*" OR "Andersen’s behavio*ral model of health serv*" OR "Andersen and Newman behavio*ral model of health serv*" OR "Andersen-Newman Behavio*ral Model of Health Serv*" OR "Andersen’s expanded behavio*ral model*" OR "health behavio*ral model of Andersen" OR "Andersen Behavio*ral Model" OR "Behavio*ral Model of Health Services Use" OR "Andersen Health Behavio*r Model" OR "Andersen Utili?ation Model" OR "Andersen Healthcare Utili?ation Model" OR "Andersen Framework" OR "Andersen Model of Health Service Use") AND TITLE-ABS-KEY ("health service*" OR "healthcare" OR "health care" OR "health service* utili?ation" OR "healthcare utili?ation" OR "access to care" OR "medical service use*" OR "preventive service utili?ation" OR "oral health" OR "Dental care utili?ation" OR "dental serv*" OR "dental visit*" OR "dental care u*" OR "oral health serv*" OR "dentist" OR "barriers to healthcare" OR "health

disparities" OR "healthcare disparities" OR "inequity in access" OR "mental health" OR "maternal health" OR "out-of-pocket payment" OR "out-of-pocket health expenditure" OR "health expenditure" OR "healthcare cost*" OR "health care cost*" OR "health policy" OR "health economics" OR "health planning" OR "health insurance" OR "universal health coverage" OR "health system" OR "psychiatric care" OR "chronic disease*" OR "chronic illness" OR "long-term care" OR "elderly care" OR "elderly patient" OR "geriatric care" OR "primary care" OR "immigrants" OR "vulnerable group*" OR "disabled person*")) was used.

This initial query returned 1275 records covering the period from 1976 to 2025. After limiting the results to English-language publications, 1230 records remained. A manual screening of abstracts was then conducted to exclude studies not aligned with the research scope, resulting in the removal of 7 records. Thus, a total of 1223 articles were included in the final bibliometric analysis. The full process is illustrated in the PRISMA flow diagram (Figure 1). For data processing and visualisation, the select records were subsequently exported in CSV format (with BibTeX metadata).

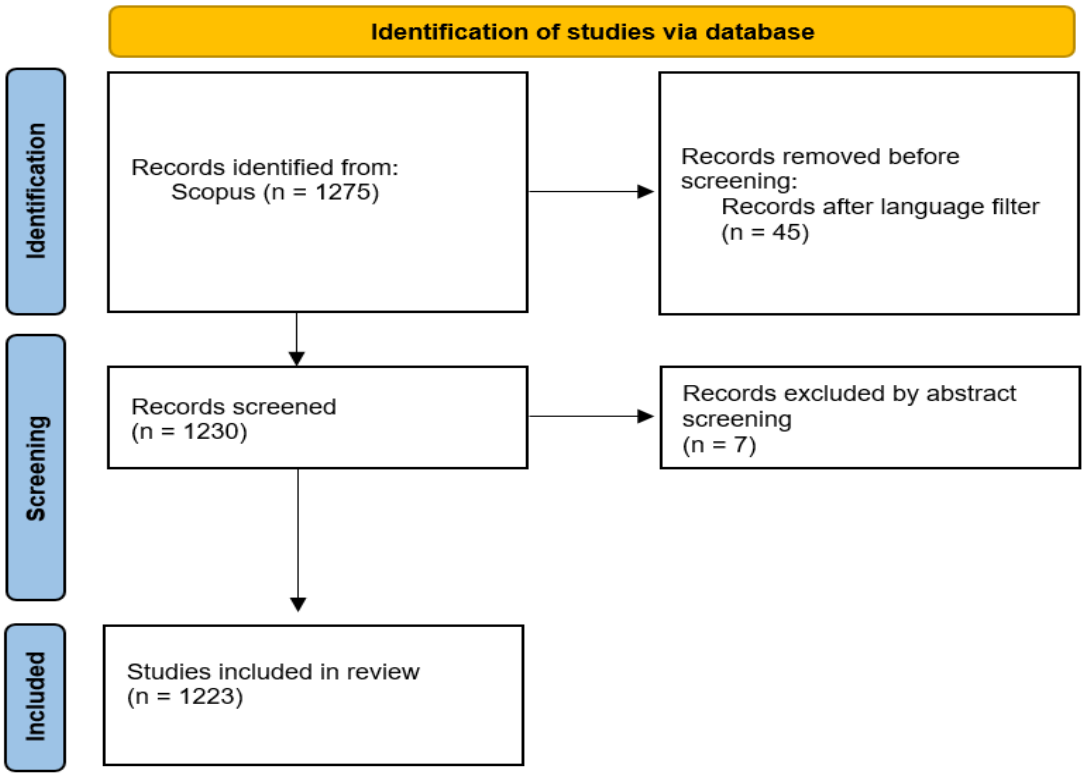

Figure 1. PRISMA Flow Diagram Outlining the Literature Selection Process in the Bibliometric Analysis

Following data collection, a pre-processing phase was conducted to prepare the dataset for co-occurrence analysis using keywords as units of analysis. It was observed that semantically identical terms appeared in varying forms across different records, like "Andersen behavioural model," "Andersen model," and "Andersen health behavioural model." To ensure consistency, such variations were standardised under a single term ("Andersen behavioural model"). Similar consolidation was applied to terms like "access to care" and "healthcare access," as well as "healthcare utilization," "health service use," and "health service utilisation."

There are numerous commercial and free software tools available for scientific mapping. VOSviewer version 1.6.18 (van Eck and Waltman, 2010) and Bibliometrix (Aria and Cuccurullo, 2017) were utilised in this study for data visualisation and analysis. Bibliometrix, implemented in R and accessible via its web interface Biblioshiny, enables comprehensive bibliometric analysis through scientific mapping techniques. VOSviewer, an open-source Java-based tool, was employed to construct and visualise bibliographic networks, including keyword co-occurrence and thematic clusters.

2. ANALYSIS

The findings of the bibliometric analysis of the literature on ABM in healthcare are shown in this section. Four parts comprise the results: (1) general publication trends; (2) prominent topics; (3) networks of keyword co-occurrences; and (4) thematic structure and evolution.

The annual distribution of ABM-related publications in the healthcare literature from 1976 to 2025 is shown in Figure 2.

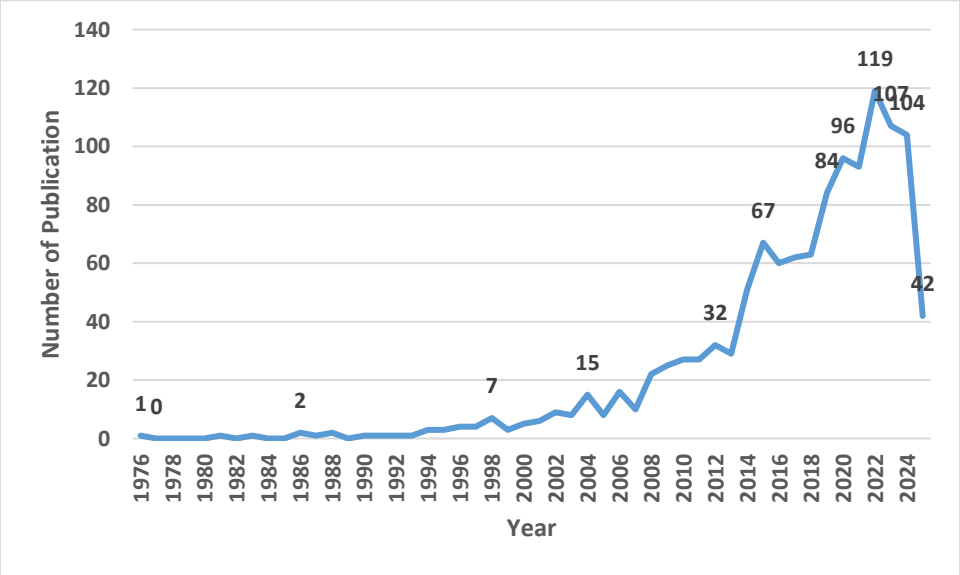

Figure 2. Yearly Distribution of Publications on the Andersen Behavioural Model in Healthcare

Until the early 2000s, the model received limited scholarly interest, with annual publications remaining below 10. After 2008, there was a notable rise, with 32 publications in 2012. This increasing trend persisted, reaching a notable peak of 119 publications in 2022. There was a small decline in 2023 (107) and 2024 (104) after that. The reason for the sharp drop observed in publications is that those in 2025 could not yet been fully indexed (42 publications) (Figure 2).

The overall trend suggested a growing academic interest in the application of ABM, particularly over the last decade. This could be due to the model's growing applicability in addressing health equity, service utilisation, and healthcare access in a variety of contexts.

Prominent Topics Identified Through Author Keyword Frequency

According to Kuhn (2012), scientific fields evolve over time through shifts in theoretical, conceptual, and methodological paradigms. These transitions are often accompanied by changes in the terminology used by scholars to describe emerging phenomena. As a result, lexical shifts are important for indicating paradigm shifts and can provide information about how a discipline's research priorities are changing. Thematic trends and conceptual focus areas can be identified over time by monitoring the frequency and co-occurrence of keywords in the healthcare literature on ABM.

Keywords are defined as useful and efficient way to find and examine the main ideas of scientific publications in bibliometric research. Author keywords, which are terms chosen by authors to represent the primary themes of their research, were used as the unit of analysis in this study (Tripathi et al., 2018). The 25 most-used keywords related to the ABM in the healthcare field were the focus of the analysis (Table 1).

Table 1. Core Concepts in the ABM Healthcare Literature Based on Keyword Frequency

Rank	Keywords	Frequency
1	Andersen behavioural model	324
2	Healthcare utilization	237
3	Access to care	95
4	Older adults	79
5	Oral health	65
6	Mental health	51
7	Immigrants	48
8	Health-seeking behaviour	44
9	Health disparities	44
10	Primary care	40
11	Emergency department use	37
12	China	33
13	Long-term care	33
14	COVID-19	31
15	Barriers	27
16	Depression	27
17	HIV	25
18	Qualitative research	25
19	Health insurance	24
20	Health services	24
21	African-American	23
22	Mental disorders	22
23	Dental care use	20
24	Caregivers	19
25	Mental health services	19

Table 1 shows the 25 most frequently occurring author keywords within the ABM-related healthcare literature. The most common term was “Andersen behavioural model” (n=324), followed by “healthcare utilization” (n=237), which directly reflects the original purpose of model.

The prominence of terms such as “access to care” (n=95), “health disparities” (n=44), and “barriers” (n=27) highlighted the frequent use of the model in examining issues of equity and accessibility in healthcare systems. The list also demonstrated the broad application of the model to specific populations and service areas. For example, keywords such as “older adults” (n=79), “immigrants” (n=48), “African American” (n=23), and “caregivers” (n=19) indicated a focus on vulnerable or underserved groups. In addition, topic-specific keywords such as “oral health” (n=65), “mental health” (n=51), “depression” (n=27), “primary care” (n=40), “long-term care” (n=33), “emergency department use” (n=37), and “HIV” (n=25) demonstrated the wide-ranging application of the model across various healthcare domains and clinical conditions. The appearance of terms like “COVID-19” (n=31) and “qualitative research” (n=25) also reflects a recent shift toward pandemic-related challenges and a diversification in research methodologies.

Although keyword frequency analysis provides insight into the most frequently addressed ideas in the ABM-related healthcare literature, it does not fully capture the underlying relationships among these concepts. Finding research hotspots requires more than simply counting the occurrences of terms, and it also involves investigating how these terms co-occur across publications (Martinez et al., 2015). The co-word analysis was carried out in order to investigate the conceptual relationships among frequently used keywords and to identify thematic clusters that represent the intellectual structure of the field.

Thematic Structure and Evolution of Andersen's Behavioural Model Applications in Healthcare

Conceptual and Thematic Structure of Research Themes

The co-occurrence networks of terms generated with VOSviewer are displayed in Figure 3. A threshold value of at least 7 occurrences of a keyword was selected by the authors. This value indicates that at least seven publications contain each of the 71 keywords shown in Figure 3. Based on these co-occurrence patterns, 8 distinct thematic clusters were identified, each representing a specific research focus within the ABM-related healthcare literature. The full list of clustered keywords and their corresponding theme labels is provided in Table 2.

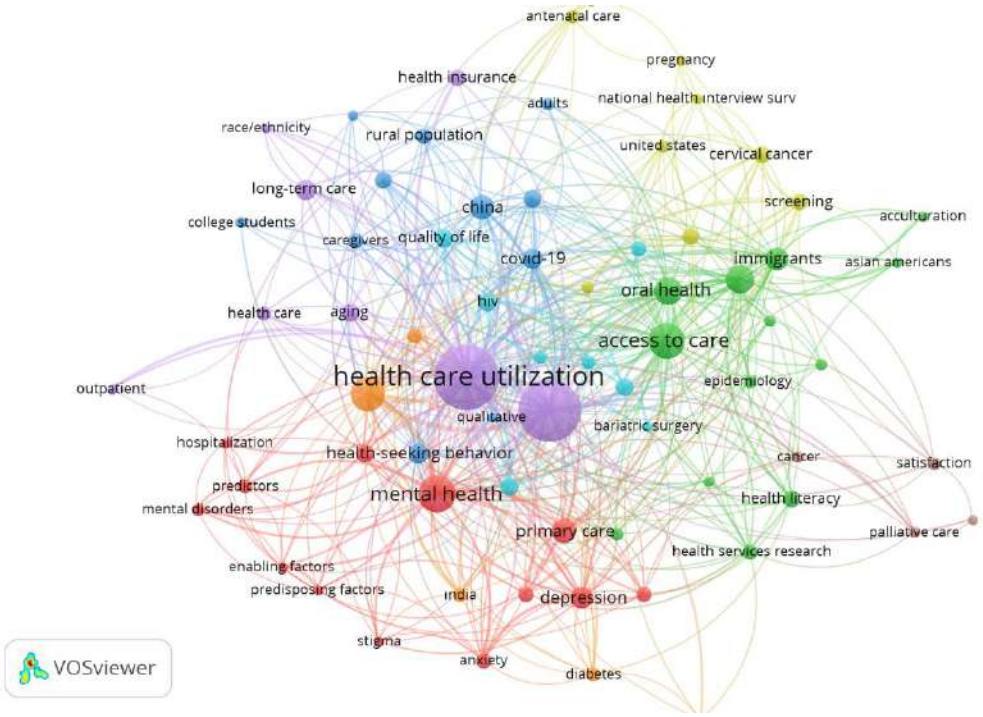

Figure 3. Keyword Co-Occurrence Map in Andersen's Behavioural Model Literature

Cluster 1, represented in red, comprised 13 keywords, with mental health emerging as the most frequently occurring term. In addition to this term, the prominent co-occurrence of "primary care", "emergency departments", and "depression" suggested that the ABM has been widely used to explore the utilisation of mental health services, particularly within primary care and emergency settings. Terms such as anxiety, social support, stigma, predisposing factors, and enabling factors indicated a focus on both individual and contextual determinants influencing healthcare utilisation. Overall, this cluster highlighted the model's relevance for explaining access patterns and psychosocial influences on mental health care utilisation.

Cluster 2, labelled in green, was linked to 13 keywords, with "access to care" emerging as the central node. Keywords such as "access to care", "health disparity", "oral health", and "immigrants" indicated that the ABM has been widely used to investigate healthcare access disparities across these specific domains. While using terms like "health literacy", "gender", "Asian Americans", and "acculturation" highlighted the impact of sociocultural factors, keywords like "health equity", "public health" and "health policy" supported this emphasis on structural inequalities. Overall, this cluster illustrated the application of ABM to investigate healthcare inequities and the sociocultural determinants of healthcare utilisation, particularly in oral health and immigrant populations.

Cluster 3, represented by blue, consisted of 11 keywords. Among the largest nodes were "China", "COVID-19", and "health-seeking behaviour". This relationship underscored the use of ABM in studying service access during pandemic-related disruptions, particularly in the Chinese context. Additionally, the inclusion of "dementia", "caregivers", "rural population" "African American", "women", and "college students" demonstrated a focus on vulnerable groups who faced barriers to healthcare during COVID-19. The inclusion of "qualitative" further emphasised the methodological focus of this study on comprehending complex individual experiences. Overall, this cluster highlighted the importance of focusing on vulnerable or underserved populations' health-seeking behaviours in specific crisis contexts.

Cluster 4, represented in yellow, was composed of 9 keywords. The most frequent and closely related terms were "screening", "breast cancer", and "cervical cancer". These keywords illustrated the use of the ABM to assess participation in cancer screening and other early detection and preventive services. Furthermore, terms like "antenatal care", "maternal health", and "pregnancy" indicated a focus on maternal healthcare utilisation. The inclusion of "adherence"

suggested that several studies examined adherence to recommended services. Many of the research areas within this cluster were population-level and focused on the United States, as evidenced by the inclusion of "United States" and "National Health Interview Survey."

Table 2. Identified Thematic Clusters in ABM-Based Healthcare Literature

Clusters/Colour	Theme Label	Co-keywords
Cluster-1 (red)	Mental Health Service Utilisation in Primary and Emergency Care	mental health, primary care, depression, emergency department, anxiety, systematic review, social support, predictors, mental disorders, predisposing factors, stigma, enabling factors, hospitalization
Cluster-2 (green)	Access Disparities in Oral and Immigrant Health	access to care, oral health, health disparity, immigrants, health services research, health literacy, gender, public health, epidemiology, health policy, health equity, Asian Americans, acculturation
Cluster-3 (blue)	Health-Seeking Behaviour Among Vulnerable Populations During the COVID-19 Pandemic	China, COVID-19, health-seeking behaviour, dementia, rural population, African American, caregivers, qualitative, adults, women, college students
Cluster-4 (yellow)	Preventive and Maternal Health Service Utilisation	screening, breast cancer, cervical cancer, antenatal care, United States, adherence, National Health Interview Survey, pregnancy, maternal health
Cluster-5 (purple)	Foundations of ABM in Aging and Health Care Utilisation	health care utilization, Andersen behavioural model, long-term care, aging, health insurance, health care, race/ethnicity, outpatient
Cluster-6 (aqua)	Barriers to Care in Vulnerable Populations	barriers, quality of life, qualitative research, HIV, socioeconomic factors, adolescents, Canada, bariatric surgery
Cluster-7 (orange)	Chronic Disease and Aging-Related Utilization	elderly, determinants, diabetes, India, chronic disease
Cluster-8 (brown)	Palliative and Cancer Care Access and Satisfaction	cancer, palliative care, satisfaction, Medicaid

Cluster 5, visualised in purple, comprised 8 keywords and was centrally positioned in the co-occurrence network. The most frequently occurring terms were "health care utilization" and "Andersen behavioural model", reflecting the conceptual core of the ABM literature. The co-occurrence of "aging", "long-term care", and "health insurance" highlighted the model's role in examining how insurance coverage shapes service use among older adults and in long-term care

settings. Additionally, the inclusion of “race/ethnicity” pointed to the model’s capacity to assess disparities in access. Terms like “outpatient” and “health care” suggested a broad interest in various delivery settings. Overall, this cluster highlighted ABM’s foundational role in healthcare utilisation research, particularly about aging, equity, and insurance-based access.

Cluster 6, symbolised by light blue, comprised 8 keywords and concentrated on the intersection of social determinants, lived experiences, and healthcare access barriers. The most frequently occurring terms, such as “barriers” and “qualitative research”, highlighted the importance of research investigating structural and perceived barriers to care, especially using qualitative approaches. The prominence of “HIV” pointed to the examination of condition-specific challenges faced by individuals. Additional terms, such as “quality of life”, “socioeconomic factors”, and “adolescents”, indicated a focus on vulnerable populations and how social disadvantage and life quality shape healthcare utilisation. The inclusion of “Canada” (n = 9) suggested region-specific analyses, while “bariatric surgery” (n = 7) reflected interest in barriers unique to particular clinical conditions. Overall, this cluster captured equity-oriented and qualitatively based approaches to understanding healthcare access in vulnerable populations.

Cluster 7, labelled in orange, consisted of 5 keywords, focused on healthcare utilisation among the elderly. The presence of “chronic disease”, “diabetes”, and “determinants”, which are frequently occurring with the term "elderly", indicated that studies have focused on the determinants of service utilisation in ageing populations, especially with chronic diseases such as diabete. The inclusion of “India” drew attention to studies conducted regions, indicating a global interest in the contextual factors that influence non-communicable disease care.

Cluster 8, labelled in brown, consisted of 4 keywords. It focused on healthcare utilisation in the context of serious illnesses and end-of-life care. Terms like “cancer”, “palliative care”, and “satisfaction” suggested a research focus on the quality, accessibility, and outcomes of care for critically ill patients. The inclusion of “Medicaid” highlighted the relevance of insurance coverage and public health financing in shaping service access within these settings. Overall, this cluster reflected ABM’s application in condition-specific and system-level analyses related to cancer care and palliative services.

Temporal Evolution of Research Themes

Based on the average publication year of author keywords, Figure 4 shows the temporal evolution of research topics related to ABM in healthcare. As shown by the timeline colour gradient in the

lower-right corner of the figure, keywords shaded in yellow denoted more recent research focusses, while those shaded in dark blue indicated earlier usage in the literature.

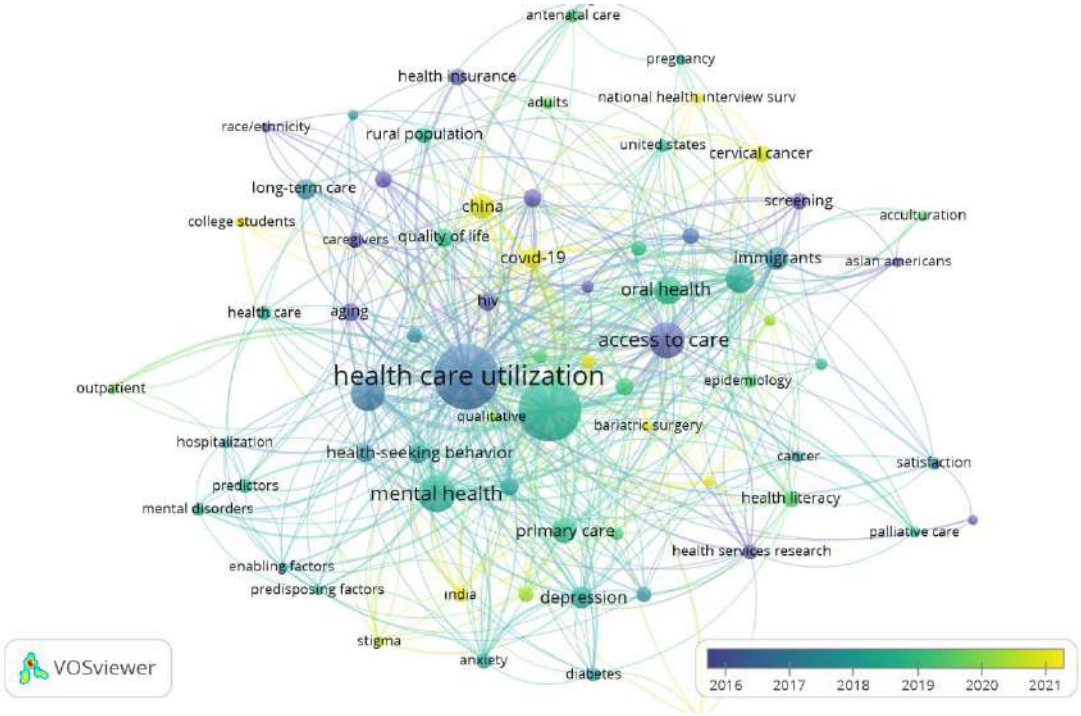

Figure 4. Thematic Evolution Based on Average Publication Year

Previous studies (2016 and earlier) were indicated in dark blue and mostly focused on broad and fundamental topics such as “healthcare utilisation”, “access to care”, “elderly people”, and “aging”, reflecting the model's initial concentration on long-term care and utilisation patterns. Mid-period themes (2017–2019, green), such as “primary care”, “mental health”, “dental health”, and “health-seeking behaviour”, suggested a shift towards behavioural and preventative factors. In recent years, more diverse and contextual topics have gained attention, such as “COVID-19”, “China”, “health equity”, “adolescents”, “college students”, “chronic illness”, and “cervical cancer” (2020–2021, yellow-green). These show an increasing interest in applying the ABM to new public health concerns, under-represented populations, and specific clinical diseases.

Thematic Map Analysis: Relevance and Development of ABM-Related Health Topics

In thematic mapping, themes are evaluated based on two dimensions: *centrality*, reflecting their relevance to the overall research field (horizontal axis), and *density*, indicating the degree of internal development (vertical axis) (Cobo et al., 2011). As illustrated in Figure 5, the analysis resulted in four distinct thematic clusters. *Basic themes* (high centrality but low density) are of

high relevance but exhibit lower internal development, suggesting foundational or emerging areas of study. *Motor themes* (high centrality and density) represent areas that are both well-integrated within the field and conceptually mature. *Niche themes* (low centrality but high density) are well-developed yet narrowly focused, often explored by specialised research groups. *Emerging or declining themes* (low centrality and density) point to underexplored topics that may either be gaining traction or losing relevance within the field.

Thematic map analysis provided insights into the conceptual landscape of the literature on ABM in healthcare (Figure 5).

Basic Themes: Core Underdeveloped Areas in ABM Literature

The basic themes highlighted their pivotal role in the literature by encompassing fundamental topics like "healthcare utilisation", "access to care", and "Andersen behavioural model". Keywords like "older adults", "mental health", "primary care", "long-term care", "emergency department use", "HIV", "caregivers", and "qualitative research" also highlighted how widely the model can be applied to a variety of demographics, healthcare environments, and research methodologies. This group also included emerging issues like "COVID-19", "unmet healthcare needs", and "quality of life", indicating a responsiveness to contemporary global challenges. However, their positioning in this quadrant suggested that these crucial areas are still conceptually or methodologically undeveloped, offering a field for improvement.

Motor Themes: Strongly Developed and Structurally Central Topics

The motor theme quadrant included well-developed and highly relevant themes such as "health-seeking behaviour", "depression", "mental disorders", and "mental health services". The frequent appearance of terms like "mental health service use", "stigma", "anxiety", and "social support" indicated a consolidated research focus on behavioural and psychological determinants of healthcare utilisation. The inclusion of "predictors", "diabetes", and "India" suggested a growing interest in country-specific analyses and comorbidities, making this thematic area both mature and central to the evolution of ABM applications.

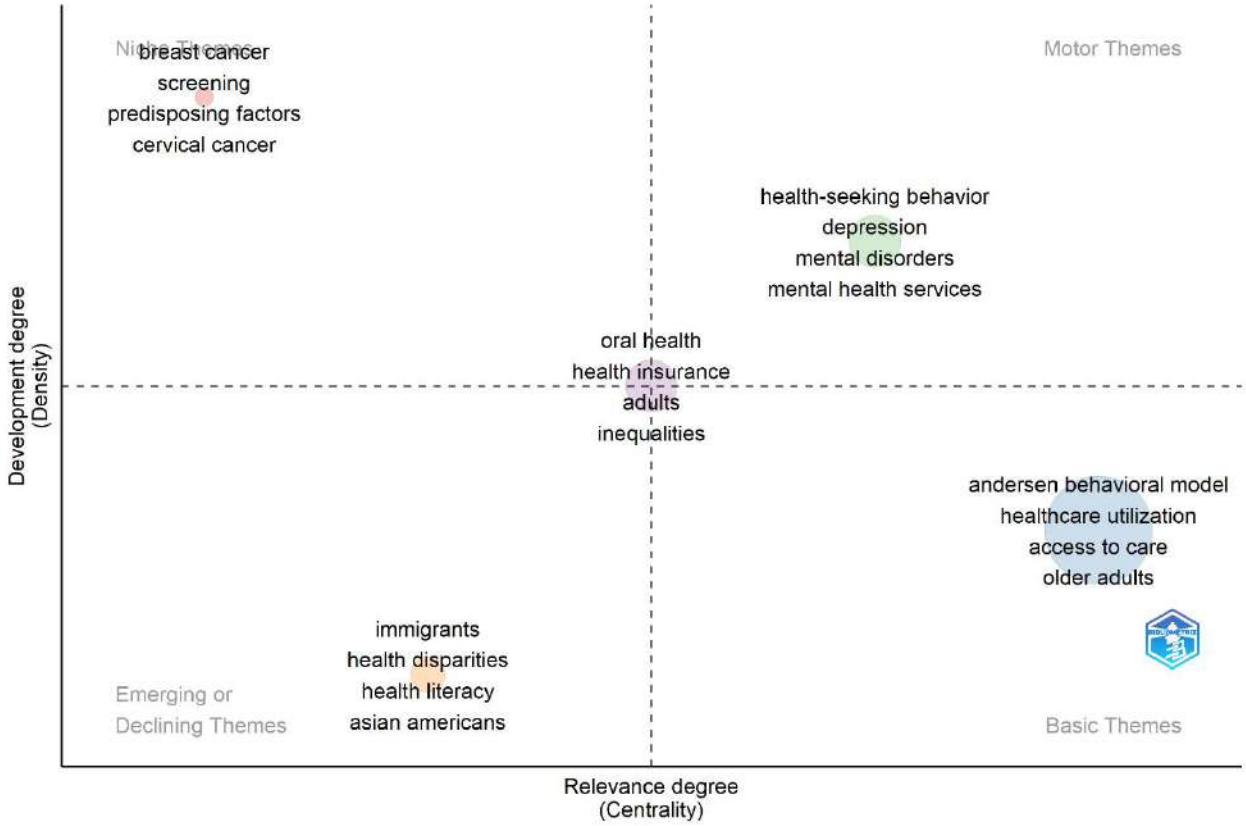

Figure 5. Thematic Map of Keyword Clusters in ABM-Based Healthcare Research

Niche Themes: Well-Developed but Less Central Research Areas

"Breast cancer", "screening", "predisposing factors", "cervical cancer", and "enabling factors" were among the niche topics that the thematic map identified as being in the upper-left quadrant. Particular subfields seemed to have concentrated attention on these themes due to their apparent internal coherence and methodological maturity. However, their relatively low centrality suggested a lack of complete incorporation into the main context of ABM in healthcare. They represented specialised applications rather than the core concepts found in the larger literature, especially in oncology and preventive health.

Emerging or Declining Themes: Peripheral but Socio-culturally Stand-out Topics

In the quadrant of emerging or declining themes, keywords such as "immigrants", "health disparities", "health literacy", and "Asian Americans" were included. These topics demonstrated relatively low centrality and density, indicating that they may be receiving little scholarly attention in the ABM literature or that they have only recently become research interests. Despite their peripheral location on the thematic map, they represented significant sociocultural aspects of

healthcare access and utilisation, especially among underserved or minority populations. These keywords may point to a developing but still undeveloped emphasis on cultural competencies and structural inequality in healthcare delivery frameworks.

Cross-Cutting Themes with Moderate Development and Relevance

Thematic map analysis identified a group of keywords “oral health”, “health insurance”, “adults”, “inequalities”, “dental care use”, “antenatal care”, and “socioeconomic status” positioned near the centre of the strategic diagram. These keywords represented moderately developed and contextually relevant research themes that intersect multiple dimensions of healthcare utilisation. Their centrality implies that they serve as links among the ABM literature's basic and specialised fields. Topics such as “oral health”, “health insurance”, “socioeconomic status”, and “inequalities” are especially notable for connecting clinical, demographic, and socioeconomic aspects of access and service use.

The thematic mapping of keywords provided a multidimensional perspective on the conceptual organisation and development of ABM literature in healthcare. This structure demonstrated both the maturity of current research lines and areas with unrealised potential.

3. DISCUSSION

This study explored the conceptual, thematic, and temporal evolution of research applying ABM in healthcare. The results revealed a varied and dynamic body of literature, reflecting the enduring significance of the model and its enhanced application to a broad range of healthcare issues.

The significant rise in publications following 2008, which peaked in 2022, probably reflects ABM's growing significance in the rapidly evolving healthcare landscape. The model's versatility across various health system contexts and its relevance to global issues like the COVID-19 pandemic, migration, and health equity may be the cause of this upward trend. Because of its conceptual adaptability, scholars can modify the framework to fit populations, service types, and policy contexts, which could sustain scholarly interest over time.

According to the keyword frequency analysis, ABM research is still focused on fundamental topics like healthcare utilisation and access to care, but it is also adapting to new issues like COVID-19, older adults, oral health, mental health, and immigrant populations. These results are consistent with Lederle et al. (2021), who also noted an emphasis on migrant groups,

aging, mental health, and general healthcare. The use of ABM as a broad framework for analysing access and utilisation across various contexts is further supported by the fact that most studies lacked a specific disease focus. Moreover, according to Babitsch et al. (2012), the model is regularly used in studies involving vulnerable groups, especially when studying access inequalities among older adults, immigrants, and other socially disadvantaged groups. This convergence supports the notion that ABM is being used more and more in empirical studies that tackle practical healthcare issues rather than being limited to theoretical discussions of access (Alkhawaldeh et al., 2023).

A broad thematic spectrum in the use of ABM in healthcare research was found by the co-word analysis. Cluster-1 focused on mental health and its psychosocial aspects (e.g., anxiety, social support, stigma) in service utilisation, especially in primary care and emergency services. This result is consistent with Roberts et al. (2018), who conducted a systematic review of the factors influencing service use for common mental disorders. Their analyses present the significance of enabling factors like social support and predisposing factors like age and gender. It also emphasises that stigma is an important but underexplored issue and highlights the importance of incorporating cultural and attitudinal factors into the ABM framework.

The use of the model in addressing social determinants and vulnerable populations was demonstrated by Cluster 2, which includes oral health, immigrant health, and health disparities. This cluster is supported by Hajek et al. (2021), who show that socioeconomic factors like income, education, and insurance status consistently affect access to dental services, and that the ABM is widely used to examine dental service use. Their review highlights structural disparities in oral healthcare, which is consistent with the cluster's focus on vulnerable populations and social determinants, even though immigrant status was less frequently discussed. Likewise, Shahid et al. (2021) support these results by demonstrating how intersecting sociodemographic and psychosocial barriers shape oral health disparities among adults. Parallel to this, Cluster 6 addressed socioeconomic determinants and barriers to service access for adolescents and individuals living with HIV as vulnerable populations. This cluster also emphasises access issues, socioeconomic factors and quality of life which are often explored using qualitative methodologies. In their systematic review, Lederle et al. (2021) drew attention to the limited application of qualitative approaches in ABM-based research and noted that qualitative studies focus on individual characteristics and less on contextual factors and health behaviours. This

finding backs up the idea that qualitative research is still an important but underexplored area, showing that we need to use a wider variety of methods in future applications of the model.

Cluster 3 focused on the application of ABM in understanding health-seeking behaviour during pandemic-induced disruptions, with a particular focus on vulnerable groups such as women, rural populations and ethnic minorities. The central role of COVID-19 and China-related studies suggests that ABM has been adapted to study access challenges in crisis contexts. These findings are in line with Tannor et al. (2024), who detected significant declines in service utilisation in Sub-Saharan Africa during the pandemic, particularly among individuals with chronic and maternal health needs.

The emergence of groups focused on cancer and palliative care (Cluster 8) and maternal health, cancer, and screening (Cluster 4) shows that more researchers are interested in using ABM for specific health conditions. Treanor and Donnelly (2012) state that the United States conducts many ABM-based cancer studies on breast cancer. This result is similar to Clusters 4 and Cluster 8, which emphasise the model's condition- and context-specific applications and have a strong emphasis on cancer-related themes and U.S.-centric studies. Also, Cluster 4 includes terms like maternal health, pregnancy, and National Health Interview Survey, which aligns with studies showing that the ABM originated from large-scale survey research done in the United States (Radhamony et al., 2024). Moreover, Cluster 4 is supported by Alibhai et al. (2022) and Tolossa et al. (2024), who use the ABM to investigate the use of prenatal care and associated obstacles. Their emphasis on pregnancy, adherence issues, and preventive maternal services is in line with the cluster's focus on reproductive health and following recommended care.

The ABM is still a crucial framework in studies on older adults, as evidenced by Clusters 5 and 7, which show the model's fundamental application in studies of aging, chronic illness, and long-term care. Strong empirical support for these clusters is provided by Soleimanvandi-Azar et al. (2020), who demonstrate how the model is still used to direct studies on aging and the use of outpatient services. Their results highlight how well the ABM captures the intricate interactions between need, enabling, and predisposing factors that influence later-life healthcare access. By showing how the model has been used to identify systemic and psychosocial barriers to care for people with diabetes, Paduch et al. (2017) also support Cluster 7. Their results demonstrate the applicability of the ABM in meeting long-term care requirements, especially for populations that are socioeconomically disadvantaged and ethnically diverse.

The global adaptability of the model is further demonstrated by the inclusion of several high-frequency terms linked to various contexts (such as the US, China, India, and Canada). The diversity of the population and themes shows how the ABM evolved from being a framework that only addressed healthcare access to a multifaceted instrument that can be used in various settings, disciplines, and age groups. These results support the ABM's development into a flexible research framework and are in line with the systematic review by Lederle et al. (2021), who also highlighted the model's adaptability across a range of care environments, populations, and health conditions.

Thematic mapping further demonstrates the multifaceted nature of ABM applications. Although they are still fundamental, basic themes like the Andersen behavioural model, utilisation, and access show little internal development, suggesting room for more conceptual improvement. On the other hand, motor themes, such as mental illnesses, depression, and health-seeking behaviour, are essential to current ABM research and have strong methodological foundations. Magaard et al. (2017) offer evidence, highlighting the widespread application of the ABM in studies on depression-related help-seeking behaviour. Their results highlight the importance of fundamental ABM elements, especially need and predisposing factors, while also pointing out little-known elements like stigma and attitudinal barriers. These results support the motor themes' integrative yet dynamic function within the larger ABM framework.

Niche themes, like breast cancer, screening, predisposing factors, and cervical cancer, especially oncology and preventive care, represented specialised but peripheral applications. Orji et al. (2020) provide an example of a specialised use of the ABM, concentrating on African American women's breast cancer screening. Their emphasis on care that is specific to certain conditions and prevention aligns with the results in Clusters 4 and 8, which backs up the model's focused but peripheral application in cancer treatment.

Emerging or declining themes, such as immigrants, health disparities, and health literacy, indicated understudied but socio-politically significant areas. It might be beneficial to incorporate these themes more thoroughly into analyses based on ABM. Lin (2021) strongly supports Cluster 2 and immigrant health as one of the emerging themes. She illustrates how older immigrants' access to healthcare is restricted by intersecting factors, including language, race, and structural policy barriers. Her use of a broader ABM framework that takes power dynamics and social determinants into account underscores the necessity of more theoretical integration in studies on cultural marginalisation and health disparities. The results of Adigun et al. (2020) and Seo et al.

(2016) provide additional support for this. Both studies demonstrate how patterns of access and use are influenced by culturally specific factors, language barriers, and immigration status. Considered as a whole, these studies highlight the need for more complex, equity-focused ABM applications.

Cross-cutting concepts that connect clinical, behavioural, and structural elements and support the interdisciplinary potential of the model were prominent in the strategic map. These included oral health, socioeconomic status, and health insurance. The results show that these factors serve as important determinants of healthcare utilisation, which is in line with Zardak et al. (2023). However, structural and contextual aspects of ABM-based dental care research remain understudied (Galvao et al., 2021; Zardak et al., 2023)

These results were complemented by the temporal co-word analysis, which demonstrates that early ABM research focused on aging populations and utilisation, whereas more recent studies have turned their attention to individual behaviours, psychosocial factors, and new global health issues. This advancement shows how adaptable the model is to deal with both established healthcare priorities and novel challenges like the COVID-19 pandemic. This result is consistent with earlier ABM literature reviews. In the systematic review by Babitsch et al. (2012), it appears that most of the early studies concentrated on healthcare utilisation in older adults and general populations, with a particular focus on enabling and predisposing factors. A more recent study, the systematic review by Alkhawaldeh et al. (2023), demonstrates a clear shift towards the analysis of individual behaviours, psychosocial determinants, and structural inequities, frequently with the use of mixed-methods or qualitative approaches. Their review also highlights the use of ABM in a variety of care settings and a growing interest in vulnerable and marginalised groups, such as immigrants and people with complex or chronic conditions. Overall, these patterns support the current findings about ABM's evolving use in addressing modern healthcare issues.

As a result, the application of ABM has expanded both thematically and methodologically. The growing applications of the model in clinical, behavioural, and equity-focused fields reflects a flexible and dynamic research framework, even though it is still based on its initial emphasis on access and utilisation. Alkhawaldeh et al. (2023) point out that the model's adaptability enables wide-ranging adaptation in a variety of contexts. However, this same flexibility could result in the inconsistent categorisation of important variables, which could compromise theoretical coherence and make cross-study comparability more difficult. Similarly, Zardak et al. (2023) highlight that a

significant portion of the ABM literature still struggles with methodological issues related to capturing all six domains of the model: contextual, predisposing, enabling, need, behaviour, and outcome. Finally, these drawbacks point out the necessity of future research that is more consistently operationalised and conceptually aligned.

4. CONCLUSIONS AND RECOMMENDATIONS

This study provided a comprehensive bibliometric overview of the use of ABM in healthcare research, revealing its conceptual structure, thematic diversity and evolving focus over time. The results showed that the applications of the model have spread to include mental health, oral health, chronic illnesses, and maternal care although fundamental topics like access to care and healthcare utilisation are still important. The increasing focus on equity-oriented and psychosocial themes, as well as the ongoing gaps in addressing sociocultural determinants and vulnerable or under-represented populations, are further highlighted by thematic and temporal analyses.

Future studies could use ABM to examine how access to oral health and mental healthcare is impacted by intersecting factors, especially in underserved areas, such as chronic illness, low socioeconomic background, and immigrant status. Creating context-specific frameworks within ABM could also increase its usefulness in directing the creation of policies related to migrant health and health equity. The use of qualitative or mixed methods designs can help ABM studies better address issues such as migrant health and health literacy by capturing systemic, linguistic, and cultural barriers that traditional quantitative approaches may overlook. Bringing attention back to basic ideas like "access to care" would be helpful, especially by comparing different healthcare systems or looking at changes over time to understand how different factors affect access. By advancing these areas, ABM could continue to be a useful framework for leading person-centred, equitable healthcare policies and interventions.

This study has several limitations. First, the analysis relied solely on the Scopus database and included only English-language publications, potentially excluding relevant studies published elsewhere. Second, the use of specific software tools (VOSviewer and Bibliometrix) may have influenced clustering outcomes due to variations in the underlying algorithms. Third, inconsistencies in author keywords may have limited the comprehensiveness of the results. Finally, indexing delays may result in the under-representation of recent publications.

Consequently, ABM remains a useful framework for directing person-centred healthcare studies and policies. To improve the model's applicability within global health systems, future studies should expand its application through vulnerable populations, structural determinants, qualitative approaches and emerging public health issues.

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Organizational Agility in the VUCA Environment of Businesses: A Field Study [a]

Abstract

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Abstract

Aim: Today's business world is defined by the concept of VUCA, which consists of Volatility, Uncertainty, Complexity, and Ambiguity. Consequently, the evolution of businesses toward an agile organizational structure has become a critical factor. The aim of this study is to determine the level of organizational agility in private health insurance companies operating in the VUCA world and to examine whether sociodemographic variables create a difference in the perception of organizational agility.

Methods: The research examines whether the sample's perception of agility differs based on gender, age, education level, status, and tenure. Data were collected from one hundred participants employed by insurance companies operating in Istanbul, utilizing a survey methodology.

Results: According to the findings, differences were observed in the speed dimension of organizational agility between the "18-24" and "35-44" age groups Furthermore, statistically significant differences were found in the flexibility, responsiveness, and speed dimensions, as well as the overall score, between "specialist" and "supervisor, executive, assistant manager" positions. The overall mean score of participants' perceptions of organizational agility was determined to be 3.92.

Conclusion: A significant difference was found between organizational agility according to age and the position (status) worked in. The level of organizational agility was also determined to be high (3.92). The high perception of organizational agility after the pandemic in our study findings can be expressed as insurance companies attach importance to the concept of agility in this sense and organize and/or will organize their ways of doing business accordingly.

Keywords: VUCA, organizational agility, health insurance, organizations

INTRODUCTION

Today, in order for businesses to gain competitive advantage over others and maintain their market share, they need to develop structures and processes in line with the demands of the variables in their internal and external environment (Akkaya and Tabak, 2018). In the management processes for businesses, the main basis of future predictions and strategic plans and targets in parallel with

this is the data and experiences of the past years. In the strategic management process, business projects for the future are developed by utilizing the experienced data and introducing new strategies and methods. However, if the current time and conditions do not benefit businesses to make strategic forecasts, this situation indicates the existence of a VUCA environment. In the VUCA world-defined by Volatility, Uncertainty, Complexity, and Ambiguity-businesses must quickly adapt to these changes in their environment and evolve into agile organizational structures in order to survive. The global coronavirus pandemic that began in 2020 stands as the most concrete example of the VUCA concept. Therefore, the pandemic has shown that adapting to changing environmental conditions is of vital importance for businesses in all sectors. In particular, this health crisis has highlighted the importance of agility in the adaptation processes of health insurance companies, just as it has for all healthcare institutions operating in the field. Based on this, the present study was conducted to determine the level of organizational agility in health insurance companies and to evaluate the factors that influence it.

CONCEPTUAL FRAMEWORK

Concept of VUCA

The acronym VUCA, describing an environment characterized by Volatility, Uncertainty, Complexity, and Ambiguity, has become a frequently encountered management concept in both academic and business spheres today. Initially employed by the U.S. military in the post-Cold War 1990s to describe the turbulent, contentious, and uncertain aspects of the multipolar world order, VUCA quickly evolved into a military mantra guiding commanders in preparing for ambiguous and unknown situations.

With the accelerating pace of change in the business world, this concept has gained popularity and has started to be used in management science terminology to determine the current and future leadership positions of companies in all sectors and of all sizes (Bernstein, 2014). The fields of business and management sciences adopted the concept of VUCA following the financial crisis of 2008 - 2009, during which companies worldwide were confronted with similar conditions in their social and economic environments (Schick et al., 2017). The global financial crisis of 2008 clearly demonstrated that existing management approaches were inadequate for addressing the challenges faced by the business world. This period led to a clearer understanding of the effects of the VUCA environment and positioned it as the foundation for new solutions. Consequently,

businesses must now recognize that the current world is a VUCA world and must develop new management philosophies accordingly (Zaucha, 2019). Today, the VUCA environment is regarded as a fundamental challenge for businesses and is accepted as the "new normal" and the "new world order" of business environments (Gandhi, 2017).The components of the VUCA framework are presented below.

Volatility

The first component of the VUCA concept volatility, is defined as a rapid change in events and conditions, but not in a predictable or recurring manner. Change occurs frequently and is sometimes unpredictable (Bennett and Lemoine, 2014). Today, the unexpected and overwhelming occurrence of change makes it impossible for businesses to predict change. In fact, volatility is defined as the turbulence generated by ever-increasing change and the speed of that change (Yurdasever, 2020). Volatility causes instability and affects the dynamics of decision-making, the degree of turbulence and the speed of change (Bernstein, 2014).

Market fluctuations require businesses to be prepared for uncertain threats and possibilities. However, these rapid and drastic changes create instability for leaders and businesses (Çiçeklioğlu, 2020). Therefore, the extreme fluctuations in the economy, socio and geopolitical areas make it difficult for businesses to manage these changes with the management styles they applied in a stable world in the past. In this new world order, the past experiences and best practices of businesses do not offer them adequate solutions for the current and future business world (Condreanu, 2016). At this point, agility is expressed as the key to cope with variability. In this context, businesses need to direct their resources effectively in order to build excess capacity and be flexible to change (Bennett and Lemoine, 2014).

Uncertainty

The second component, uncertainty, signifies situations where cause-and-effect relationships exist, but sufficient information about the current state is lacking (Bennett and Lemoine, 2014). As volatility increases and data constantly shifts, the level of uncertainty escalates (Gandhi, 2017). It also refers to the difficulty in interpreting the events and/or situations faced by businesses. Although the causes and consequences of the events encountered are predictable, it cannot be predicted how they will affect the future of the business, whether they are important, whether a quick reaction/response and efficient resource investment are required. Therefore, it becomes

difficult to find an effective solution in such an environment and to determine the conditions under which it will be applied (Zaucha, 2019).

In today's business world, uncertain outcomes and disruptive features in organizational structures and business models challenge businesses, especially with the lack of clear conditions regarding customer preferences, sectors and markets (Çiçeklioğlu, 2020). In this context, businesses need to realize that information is critical to reduce uncertainty. Going beyond existing sources of information, collecting new data and evaluating this data from new perspectives can be stated as one of the important factors in clarifying uncertainty (Bennett and Lemoine, 2014).

Complexity

Complexity, the third component of the VUCA concept, refers to situations in which there are many interconnected variables, information and procedures that are difficult to manage because they are often multiform and intricate (Bennett and Lemoine, 2014). With the development of technology, communication and information flow has become fast and smooth, and globalization has led to an increase in the level of complexity faced by businesses. The interdependent, multi-layered data network created by the acceleration of communication and information flow and the reduction in trade barriers with globalization have led to a more integrated and interdependent world economy. This situation brings both opportunities and challenges for businesses (Dhillon and Nguyen, 2020).

The increasing mobility of people around the world, the intense use of technology and the disappearance of borders increase the complexity of the world around us, making it difficult for businesses to understand and even manage the intricate structures that exist in both the external and internal environment (Condreanu, 2016). The most effective and efficient way to deal with complexity is for the business to restructure operations to adapt to external environmental complexity. Research also shows that businesses that adapt themselves to adapt to environmental change perform better than businesses that maintain their past structures and processes despite the changing business environment. Therefore, it becomes important for businesses to try to adapt their business processes to reflect environmental complexities in order to manage this process (Bennett and Lemoine, 2014).

Ambiguity

Ambiguity, the last component of the VUCA concept, is defined as a lack of clarity about the meaning of an event (Kaivo-oja and Lauraeus, 2018). It is also defined as the lack of clarity and

difficulty in determining the reasons behind the events and the questions of who, what, where, how and why (Sullivan, 2012; Lawrence 2013). Ambiguity refers to the potential for misinterpretation of events and situations, the confusion of cause and effect, and the blurring of facts (Çiçeklioğlu, 2020). In ambiguous situations, since there is no precedent, clarity and predictions about what to expect are limited (Bennett and Lemoine, 2014). Therefore, it can be stated that in such an environment, the ability to gather more information or make predictions by utilizing past experiences is limited.

Ambiguity is directly linked to increased innovative solutions. This can lead to a lack of clarity about what events or solutions mean, as innovations offer unprecedented, untested pathways (Zaucha, 2019). An example is the introduction of a new business model to the market or the launch of a technology application that has never been experienced before. In this case, it becomes difficult to make predictions about the future as well as not having enough information about the current situation of the initiative that will find an application area for the first time (Yurdasever, 2020). Ambiguous environments usually occur when there is a new product, market, innovation or opportunity (Bennett and Lemoine, 2014).

The important step that businesses need to take to reduce ambiguity in innovations such as introducing a new product or entering a new market is to experience the current situation. They should analyze the results of the strategies they apply through trial and error. Thus, business managers will be able to determine which strategies are useful or not in situations where the old rules of the business world no longer apply (Bennett and Lemoine, 2014).

ORGANIZATIONAL AGILITY

Globalization, technological developments and outsourcing have increased unpredictability and uncertainty in all sectors, and the ability of businesses to adapt to unexpected changes has become critical. The efforts of businesses to adapt to the changes in their environment have led to the development of one of the latest concepts in management sciences and this concept is defined as agility. Agility affects the success of all organizations and stands out as an important element for businesses to survive and grow in uncertain and turbulent markets (Ganguly et al., 2009).

With the adoption of the agility approach, the concept of agile organization was also shaped and started to be used more in the business management literature. Agile organization, in other words, organizational agility, defines a flexible structure that can quickly adapt to environmental

changes, as well as an organizational structure that has the ability to offer various products to the market in line with changing customer demands and needs (Eshlaghy et al., 2010). Sharifi and Zhang (1999) define agility as the ability to cope with unexpected changes, to use these changes as an opportunity and to survive against environmental threats that the business world has never faced before (Sharifi and Zhang, 1999).Organizational agility is considered a core competency that enables strategic thinking, innovation, competitive advantage, transforming change into opportunity and being proactive. Therefore, agility has become a survival imperative for businesses rather than a preference (Harraf and Wanasika, 2015).

The uncertainty in the environment has deeply affected insurance companies along with the pandemic. In addition, due to the changing demands of customers and digitalization, insurance companies have had to tolerate and respond to changes by offering new products and services.The capabilities that agile organizations should have in order to respond appropriately to changes in the business environment are basically gathered in four main categories. These four capabilities were first introduced to the literature by Sharifi and Zhang (1999). Although there are different definitions in the literature, it is stated that these four capabilities are generally accepted. Sharifi and Zhang (1999), Zhang and Sharifi (2000), Crocitto and Youssef (2003), Lin et al. (2006), Mohammadi et al. (2015) state the four basic capabilities of organizational agility as responsiveness, competence, flexibility and speed. These capabilities are briefly mentioned below.

Responsiveness

Responsiveness, one of the core capabilities of organizational agility, is a fundamental element enabling businesses to survive and gain a competitive advantage. Nowadays, increasing and changing customer demands and needs, driven by developments in technology and digitalization, have become even more pronounced with the coronavirus pandemic. Therefore, it is necessary for businesses to be able to respond to these emerging changes appropriately and in a timely manner. Responsiveness is defined as the ability to perceive changes in the environment, manage them correctly, and integrate them into the system (Nejatian and Zarei, 2013). It is also described as the ability of businesses to identify changes occurring in their environment, respond to these changes quickly and proactively, and survive without being harmed by them (Zhang and Sharifi, 2000). From a business perspective, although responsiveness may vary by sector, it is generally described as the ability of a business to meet customer demands and requirements arising from environmental changes within the VUCA environment it operates in. In this context,

responsiveness plays an important role in the evolution of today's businesses towards an agile organizational structure (Akkaya and Tabak, 2018).

Competency

Businesses need to possess and develop fundamental capabilities, and make their existing ones dynamic, to achieve their goals and gain a competitive advantage. These capabilities, which ensure the efficiency of a business's activities, make a significant contribution to the agility process of businesses. Creating a strategic vision, using appropriate technology, ensuring product/service quality, change management, employee empowerment, and product diversity are listed among the capabilities that businesses should possess for an agile organization (Zhang and Sharifi, 2000).

Flexibility

There is no single correct method for businesses to respond to changes occurring in their environment; they need to provide different responses at different times. At this point, flexibility emerges as an important capability (Harraf and Wanasika, 2015). Flexibility is the ability of a business to use different processes and options to achieve its targeted goals. In another definition, it is considered the ability of the organization to adjust its internal structures and processes in response to environmental changes (Sherehiy et al, 2007). It is stated that within the scope of businesses' flexibility capabilities, it is important to provide flexibility in product volume, flexibility in product design and configuration, organizational structure flexibility, and personnel/employee flexibility (Zhang and Sharifi, 2000). Flexible businesses should be able to take quick action, and by making their organizational structure flexible, they should also provide a competitive advantage through market adaptation, product and/or service diversity, and technological innovations.

Speed

Speed, another agility capability, is the capacity of businesses to perform tasks and operations in the shortest possible time. The rapid introduction of new products and services to the market, fast delivery of products and services to the customer, and the quick finalization of processes by shortening operational times are indicators of a business's agility capability (Sharifi and Zhang, 1999). In addition to these processes, it is stated that learning time and the time it takes to adapt to change are also determinants of the speed capability (Sherehiy et al., 2007). It is mentioned that there is a strong relationship between the ability to respond and the ability to take quick action. In this context, the decision-making process where businesses determine their reaction to changes in

their environment reflects their responsiveness capability, while the process of implementing the decisions made and/or reflecting them to the customer is expressed as an indicator of their speed (Akkaya and Tabak, 2018).

Along with all this information from the literature, the agile organizational structure is among the rising trends during the pandemic period. In the pandemic and post-pandemic period, agility emerges as the most frequently heard concept in literature or among sectors. Agility creates value for companies in three areas: speed, customer satisfaction, and employee engagement along with attracting new-generation talent to companies. This, in turn, will provide companies with a competitive advantage. While the agile organizational structure can be applied in every sector, the banking, insurance, and telecom sectors are pioneers in Turkey, followed by the automotive, chemical, and steel sectors (McKinsey Turkey, 2021). Consequently, for private health insurance companies, which are service-oriented businesses focused on human health, the extent of uncertainty arising in the external environment became clearly evident with the pandemic. In this context, it is apparent that private health insurance companies also need to transition to an agile organizational structure to turn the sectoral impacts of external environmental uncertainty into a competitive advantage. Based on this, the following research questions have been formulated:

1. What is the level of organizational agility of private health insurance companies?

2. Is there a statistically significant difference between employees' perceptions of organizational agility in relation to their sociodemographic characteristics?

In line with all these explanations, the research hypotheses have been formulated as follows:

H_1: Employees' perceptions of organizational agility differ regarding gender.

H_2: Employees' perceptions of organizational agility differ regarding age.

H_3: Employees' perceptions of organizational agility differ regarding education level.

H_4: Employees' perceptions of organizational agility differ regarding their position within the institution.

H_5: Employees' perceptions of organizational agility differ regarding their duty period (tenure) within the institution.

1. RESEARCH METHODOLOGY

1.1. Purpose and Significance of the Study

The aim of this study is to determine the level of organizational agility in private health insurance companies operating in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) world and whether sociodemographic variables make a difference on the perception of organizational agility. For insurance companies that will initiate the agile transformation process, it can be a guiding light in terms of evaluating employee perceptions and making the necessary business planning. Due to the lack of existing research that directly overlaps with this topic in the current literature, it is thought that this study will fill a gap in the literature on a sectoral basis.

1.2. Population and Sample

According to the most recently published December 2021 employment data of the Insurance Association of Turkey (TSB), the number of employees in the headquarters and regions was 15.289. (TSB, 2022). With a 95% confidence interval and a 10% margin of error, it was deemed appropriate to have at least 96 people in the study. One hundred employees from four insurance companies determined by the convenience sampling method constituted the sample of the study due to the fact that financial, time and insurance companies are not constantly in the working offices due to their transition to the hybrid working model after the pandemic and the limited accessibility of the participants due to the hybrid model.

1.3. Data Collection Method

The data were collected through survey technique, with the questionnaire consisting of two sections. The first section includes a sociodemographic information form comprising five items related to demographic and occupational variables: gender, age, education level, position held, and years of experience. The second section utilizes the Organizational Agility Scale. This scale was originally developed by Sharifi and Zhang (1999) and later translated into Turkish and validated for reliability and validity by Akkaya and Tabak (2018). Akkaya and Tabak (2018) determined the internal consistency coefficient as 0.92 to measure the reliability of the organizational agility scale. As a result of confirmatory and exploratory factor analyses, the structure of the organizational agility scale consisted of a four-factor structure similar to the original scale. The second level factor model was found to be within the accepted goodness of fit values for the structure of the organizational agility scale and the structural validity of the scale was confirmed.

The scale consists of 17 items in total, including 8 items related to the competency dimension, 3 items on flexibility, 3 items on responsiveness, and 3 items on speed. To measure organizational agility, a 5-point Likert-type scale was used, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The organizational agility scale was applied by Çetin (2024) in the health sector. (KMO) sampling adequacy test showed a value of 0.90 and the sample size was evaluated as very good. In Bartlett's sphericity test, $p<0.01$ was obtained and the items were found suitable for factor analysis. In the factor analysis, it was stated that the variance obtained for the organizational agility scale was at a good level, considering that the variance ratio between 40% and 60% is considered sufficient. In the present study, the internal consistency of the scale was analyzed for reliability, and the Cronbach's alpha coefficient was determined to be 0.96, indicating a high level of reliability. Prior to conducting analyses and evaluations, the data were tested for normal distribution using measures of central tendency and dispersion, histogram plots, and the one-sample Kolmogorov-Smirnov test. The results confirmed that the data followed a normal distribution, and thus, parametric hypothesis tests were applied. Descriptive statistics were used to analyze the demographic variables, and frequency tables as well as measures of central tendency and dispersion were presented. The hypotheses were tested to examine whether there were statistically significant differences in organizational agility levels and perceptions based on demographic characteristics of employees in private health insurance companies. To determine whether participants' demographic characteristics influenced the dimensions of the organizational agility scale, independent samples t-tests were used for comparisons between two groups, while one-way ANOVA was applied for comparisons among more than two groups. When significant differences were identified among the groups, post hoc comparisons were conducted using the Tukey test to identify the specific groups contributing to the differences.

1.4. Ethical Approval

In order to conduct the research, ethical committee approval and permission were obtained from Marmara University Institute of Health Sciences on May 23, 2022 (Approval no: 23.05.2022-58)

2. ANALYSIS

2.1. Demographic Findings

Table 1 provides a detailed overview of the frequency and percentage distributions of the participants, categorized regarding their sociodemographic characteristics, offering insight into the composition of the study sample.

Table 1. Distribution of Participants by Socio-demographic Characteristics

Variables		n	%
Gender	Female	61	61.0
	Male	39	39.0
Age	18 -24	4	4.0
	25-34	34	34.0
	35-44	41	41.0
	45-54	21	21.0
Education Level	High School	2	2.0
	Associate Degree	11	11.0
	Bachelors Degree	61	61.0
	Masters Degree	26	26.0
Position Held	Assistant Specialist	12	12.0
	Specialist	21	21.0
	Senior Specialist	19	19.0
	Supervisor/Executive/ Assistant Manager	22	22.0
	Manager	18	18.0
	Director/Group Manager	6	6.0
	Assistant General Manager	2	2.0
Tenure	0-1 years	20	20.0
	2-5 years	21	21.0
	6-10 years	17	17.0
	11-15 years	25	25.0
	16 years and more	17	17.0
Total		**100**	**100**

The majority of the participants were women, comprising 61% of the sample. In terms of educational attainment, 2% of the participants had completed high school, 11% held an associate degree, and 26% had obtained a master's degree. The largest group, however, consisted of

participants with a bachelor's degree, representing 61% of the total. When examined by job position, 22% of the participants were employed as supervisor, executive, assistant manager while 21% held specialist roles. Senior specialists accounted for 19%, and managers for 18%, indicating that approximately 40% of the participants can be classified as mid-level managers. Regarding tenure within their organizations, the largest proportion (25%) had 11–15 years of work experience. Participants with 2–5 years of experience made up 21%, while those with 6–10 years and over 16 years each represented 17% of the sample. In terms of age distribution, 41% of participants were between 35 and 44 years old, followed by 34% aged 25 to 34 and 21% between 45 and 54.

The mean scores and standard deviations of participants' responses regarding their perceptions of organizational agility are presented in Table 2.

Table 2. Findings Regarding Participants' Perceptions of Organizational Agility

Scale/ Dimension	Min. Achieved	Max. Achieved	Mean ($\bar{X}$)	Std. Deviation
Competency	1	5	3.91	0.676
Flexibility	1	5	3.95	0.816
Responsiveness	1	5	3.96	0.807
Speed	1	5	3.86	0.780
General	1.03	5	3.92	0.707

When Table 2 is examined, it is seen that the arithmetic averages (min: 1, max: 5) of the participants' opinions on organizational agility vary between 3.86 and 3.96 and the total average is 3.92. This shows that the organizational agility level of these participating enterprises is above average. When analyzed on a sub-dimension basis, it can be stated that the "responsiveness" sub-dimension has the highest level of perception with a mean of 3.96. Similarly, the "speed" sub-dimension is the dimension perceived at the lowest level according to the opinions of the participants (with a mean of 3.86).

Parametric hypothesis tests are used for normally distributed data. In the study, since the data conformed to the normal distribution, independent t-test was applied in the comparison of two independent groups and one-way variance (ANOVA) analysis was applied in the comparison of more than two independent groups to test whether the socio-demographic characteristics of the participants differed according to the organizational agility scale and dimensions. In cases where

there was a difference in more than two independent group comparisons, Tukey test was applied to determine the groups that made a difference.

The findings of the independent t-test analysis on whether organizational agility perceptions differ according to gender are presented in Table 3.

Table 3. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Gender

Variables		Mean	Std. Deviation	t	p
Competency	Female	3.83	0.728	1.460	0.148
	Male	4.04	0.572		
Flexibility	Female	3.92	0.861	0.455	0.650
	Male	4.00	0.749		
Responsiveness	Female	3.86	0.886	1.419	0.159
	Male	4.10	0.649		
Speed	Female	3.86	0.775	0.454	0.957
	Male	3.85	0.797		

In the analysis of whether organizational agility perceptions differ according to gender, no statistical difference was found in any dimensions ($p>0.05$). Therefore, H_1 hypothesis "Employees' perceptions of organizational agility differ according to gender" is rejected.

ANOVA test analysis findings on whether organizational agility perceptions differ according to age are presented in Table 4.

Table 4. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Age

Variables	Tenure	Mean	Std. Deviation	F	p
Competency	18-24	4.25	0.4677	0.987	0.402
	25-34	3.93	0.8119		
	35-44	3.79	0.6523		
	45-54	4.03	0.4729		
Flexibility	18-24	4.83	0.,3333	2.445	0.069
	25-34	4.06	0.7989		
	35-44	3.78	0.8684		
	45-54	3.92	0.6984		
Responsiveness	18-24	4.75	0.5000	1.962	0.125
	25-34	4.05	0.8856		
	35-44	3.81	0.7889		

	45-54	3.93	0.6800		
Speed	18-24	4.75	0.5000	2.713	**0.049** (*)
	25-34	3.98	0.7008		
	35-44	3.71	0.8373		
	45-54	3.79	0.7263		

In the analysis of whether organizational agility perceptions differ according to age, a statistical difference was found in the speed sub-dimension ($p<0.05$). Accordingly, H_2 hypothesis "Employees' perceptions of organizational agility differ according to age" is accepted. The findings of the Tukey test analysis, which is used in multiple comparisons to determine in which age groups the difference occurs, are presented in Table 5.

Table 5. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Age (Tukey Test)

Dependent Variable	(I) Age	(J) Age	Mean Diff. (I-J)	p
Speed	**18-24**	25-34	0.7696	0.229
		35-44	1.0426*	**0.050 (*)**
		45-54	0.9563	0.104
	25-34	18-24	0.7696	0.229
		35-44	0.2730	0.413
		45-54	0.1867	0.813
	35-44	**18-24**	1.0426*	**0.050 (*)**
		25-34	0.2730	0.413
		45-54	0.0863	0.974
	45-54	18-24	0.9563	0.104
		25-34	0.1867	0.813
		35-44	0.0863	0.974

According to the results of the Tukey test analysis, a statistical difference was found between the "18-24" age group and the "35-44" age group in the organizational agility speed sub-dimension.($p<.05$) When the average levels are considered, the averages of the "18-24" age group and the "35-44" age group were found to be 4.75 and 3.71, respectively. It can be stated that the mean difference between the two groups is 1.04. Accordingly, it can be stated that the organizational agility perception of the participants in the "18-24 age" group is higher than the participants in the "35-44" age group. The ANOVA test analysis findings on whether the

perceptions of organizational agility differ regarding the level of education are presented in Table 6.

Table 6. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Education Level

Variables	Tenure	Mean	Std. Deviation	F	p
Competency	High School	4.312	0.4419	0.368	0.776
	Associate Degree	3.943	1.1502		
	Bachelors Degree	3.928	0.5373		
	Masters Degree	3.831	0.7482		
Flexibility	High School	4.500	0.7071	0.385	0.764
	Associate Degree	3.969	1.1590		
	Bachelors Degree	3.967	0.7063		
	Masters Degree	3.871	0.9241		
Responsiveness	High School	4.166	0.2357	0.108	0.955
	Associate Degree	3.969	1.1874		
	Bachelors Degree	3.929	0.6614		
	Masters Degree	4.012	0.9774		
Speed	High School	4.500	0.7071	0.956	0.417
	Associate Degree	4.090	0.8830		
	Bachelors Degree	3.786	0.7201		
	Masters Degree	3.884	0.8740		

In the analysis of whether the perceptions of organizational agility differ according to the level of education, no statistical difference was found in all dimensions ($p>0.05$). Therefore, H_3 hypothesis “Employees' perceptions of organizational agility differ regarding the level of education.” is rejected.The ANOVA test analysis findings on whether organizational agility perceptions differ according to the position held are presented in Table 7.

Table 7. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Position Held

Variables	Position Held	Mean	Std. Deviation	F	p
Competency	Assistant Specialist	4.020	0.9940	2.252	**0.045(*)**
	Specialist	4.256	0.5038		
	Senior Specialist	3.690	0.6392		
	Supervisor/ Executive/ Assistant Manager	3.704	0.5125		
	Manager	4.013	0.4132		
	Director / Group Manager	3.541	1.2084		
	Assistant General Manager	4.250	0.7071		
Flexibility	Assistant Specialist	4.222	1.1131	2.938	**0.011(*)**
	Specialist	4.333	0.5868		
	Senior Specialist	3.754	0.8303		
	Supervisor/ Executive/ Assistant Manager	3.545	0.7313		
	Manager	4.148	0.4157		
	Director / Group Manager	3.500	1.2247		
	Assistant General Manager	4.333	0.9428		
Responsiveness	Assistant Specialist	4.222	1.1488	2.671	**0.020(*)**
	Specialist	4.333	0.6236		
	Senior Specialist	3.754	0.6924		
	Supervisor/ Executive/ Assistant Manager	3.560	0.6537		
	Manager	4.092	0.5808		
	Director / Group Manager	3.666	1.3333		
	Assistant General Manager	4.500	0.7071		
Speed	Assistant Specialist	3.944	0.7632	2.485	**0.028(*)**
	Specialist	4.365	0.6227		
	Senior Specialist	3.614	0.8259		
	Supervisor/ Executive/ Assistant Manager	3.636	0.5990		
	Manager	3.870	0.6171		
	Director / Group Manager	3.555	1.2590		
	Assistant General Manager	3.666	1.8856		

In the analysis of whether organizational agility perceptions differ according to the position held, a statistical difference was found in all dimensions ($p < 0.05$). Accordingly, the H_4 hypothesis, which was formed as "Employees' perceptions of organizational agility differ according to the position they work in the organization" was accepted. Tukey test analysis findings used in multiple comparisons to determine the positions (status) where the difference occurs are presented in Table 8.

Table 8. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Position Held (Tukey Test)

Dependent Variable	(I) Position	(J) Position	Mean Difference (I-J)	p
Flexibility	Specialist	Assistant Specialist	0.1111	1
		Senior Specialist	0.5789	0.224
		Supervisor /Executive/ Assistant Manager	0.7878*	**0.020(*)**
		Manager	0.1851	0.989
		Director / Group Manager	0.8333	0.241
		Assistant General Manager	0	1
Responsiveness	Specialist	Assistant Specialist	0.1111	1
		Senior Specialist	0.5789	0.220
		Supervisor /Executive/ Assistant Manager	0.7727*	**0.023(*)**
		Manager	0.2407	0.958
		Director / Group Manager	0.6666	0.504
		Assistant General Manager	0.1666	1
Speed	Specialist	Assistant Specialist	0.4206	0.711
		Senior Specialist	0.7510*	**0.032(*)**
		Supervisor /Executive/ Assistant Manager	0.7287*	**0.030(*)**
		Manager	0.4947	0.384
		Director / Group Manager	0.8095	0.236
		Assistant General Manager	0.6984	0.867

When the results of the analysis in Table 8 are examined, except for the competency dimension, there was a statistical difference between "specialist" and "supervisor, executive, assistant manager" positions in flexibility, responsiveness, speed sub-dimensions. ($p<0.05$). Also, in the speed sub-dimension, there was a statistical difference between "specialist" and "senior specialist" ($p<0.05$).

When the mean levels of the answers given to the sub-dimensions are analyzed, the mean levels of the answers given by "specialist" and "supervisor, executive, assistant manager" positions in the flexibility dimension are 4.33 and 3.55, and the mean levels of the answers given by 'specialist' and "supervisor, executive, assistant manager" positions in the responsiveness dimension are 4.33 and 3.56. It can be stated that the difference between the two groups in the flexibility dimension is 0.78, while the difference between the same two groups in the responsiveness dimension is 0.77. Accordingly, it can be stated that the organizational agility perceptions of the participants working in the "specialist" position in the flexibility and responsiveness dimensions are higher than the participants working in the "supervisor, executive, assistant manager" position.

Table 9. Analysis Findings Regarding Differences in Organizational Agility Perceptions by Tenure

Variables	Tenure	Mean	Std. Deviation	F	p
Competency	0-1 years	4.075	0.7889		
	2-5 years	3.898	0.6621		
	6-10 years	3.963	0.7067	0.507	0.731
	11-15 years	3.840	0.7469		
	16 years and more	3.794	0.3825		
Flexibility	0-1 years	4.300	0.8911		
	2-5 years	4.127	0.6706		
	6-10 years	3.843	0.8343	1.985	0.103
	11-15 years	3.720	0.9163		
	16 years and more	3.784	0.5885		
Responsiveness	0-1 years	4.283	0.9506		
	2-5 years	4.047	0.7248		
	6-10 years	3.862	0.7174	1.386	0.245
	11-15 years	3.840	0.8825		
	16 years and more	3.745	0.6294		
Speed	0-1 years	4.216	0.6777		
	2-5 years	3.920	0.7063		
	6-10 years	3.705	0.7895	1.658	0.166
	11-15 years	3.680	0.9693		
	16 years and more	3.784	0.5644		

In the speed dimension, the average of the opinions of the participants working as "specialist" and "supervisor, executive, assistant manager" is 4.36 and 3.63, and in the speed sub-dimension, the average of the responses of the participants working as 'specialist' and "senior specialist" is 4.36 and 3.61. It can be stated that the mean difference between "specialist" and "supervisor, executive, assistant manager " in the speed dimension is 0.72, and between 'specialist' and "senior specialist" is 0.75. According to these analysis results, it can be stated that the organizational agility perceptions of the participants working in the "specialist" position in the speed sub-dimension are higher than the participants working as "senior specialist" and "supervisor, executive, assistant manager".The findings of the ANOVA test analysis on whether the perceptions of organizational agility differ regarding the length of service in the organization are presented in Table 9.

In the analysis of whether the perceptions of organizational agility differ according to tenure in the organization, no statistical difference was found in all dimensions. ($p>0.05$) Therefore, H_5 hypothesis "Employees' perceptions of organizational agility differ regarding their duty period (tenure) within the institution." is rejected.

3. DISCUSSION

This study aims to determine the organizational agility level of private health insurance companies and whether sociodemographic variables make a difference on the perception of organizational agility. In doing so, it seeks to highlight the importance and impact of the concept of organizational agility-which is gaining increasing significance in today's world-in private health insurance businesses that are both service enterprises and focused on human health. Since there is no existing study in the literature that directly overlaps with this topic, it is believed that this research can make a valuable contribution in that regard. According to the research findings, the participants' mean scores regarding organizational agility (on a scale from 1 to 5) range between 3.86 and 3.96, with an overall average of 3.92. Based on reference values for arithmetic means of 5-point Likert scales: 1.00–1.79 is considered very low, 1.80–2.59 low, 2.60–3.39 moderate, 3.40–4.19 high, and 4.20–5.00 very high (Özeroğlu, 2019). In this context, it can be stated that the participants' perceptions of organizational agility in insurance businesses (3.92) are high. When the literature is reviewed, it is observed that in a study conducted by Özeroğlu (2019) among employees of private hospitals, which are health and service businesses, and in another study by Gökçe (2023) on the effect of organizational agility on organizational change in five-star hotel businesses,

perceptions of organizational agility were found to be at a high level. However, due to the lack of a study that directly measures the level of organizational agility in the insurance sector, it is noted that no direct comparison can be made in this regard.

In the literature, it is indicated that the level of agility in businesses is likely to be associated with the demographic characteristics that reflect individuals' life stages (Sohrabi et al., 2014). In our study, a significant difference was also found between the age variable-a demographic factor-and perceptions of organizational agility. This difference occurred between the 18-24 age group and the 35-44 age group. Participants in the 18-24 age group were found to have higher perceptions of organizational agility compared to those in the 35-44 age group. This result is consistent with the findings of Gözcü (2020), who examined the relationship between organizational agility and organizational cynicism among university staff. In that study, Gözcü (2020) found that university staff under the age of 35 had higher perceptions of organizational agility. Similarly, in a study by Sağır and Gönülölmez (2019), which investigated the effects of both human capital and structural capital on business performance and whether organizational agility played a mediating role in this effect, statistically significant differences were found between participants' ages and their organizational agility scores. In our study, it can be suggested that participants aged 18-24, being new to the workforce or the institution, have higher motivation to work and more positive feelings and thoughts toward the organization. Moreover, the tendency of employees at the beginning of their careers to be flexible, open to learning, quick to adapt, and responsive to change also supports the findings of our study (Thayyib and Khan, 2021).

A significant difference was found between the organizational agility perceptions and the organizational position (status) of participants-one of the demographic variables-based on overall scores. This difference occurred between specialists and those in managerial positions such as supervisor, executive and assistant managers. Participants in non-managerial specialist roles were found to have higher perceptions of organizational agility compared to those in mid-level managerial roles. Similarly, in the study by Sağır and Gönülölmez (2019), statistically significant differences were also found in organizational agility scores based on participants' positions. It was observed that participants who were not in managerial roles had higher perceptions of organizational agility than those in upper, middle, and lower-level managerial positions. Therefore, these findings support our study. In a report published in 2009 by the Economist Intelligence Unit, which surveyed managers worldwide, 90% of respondents stated that organizational agility plays

a significant role in business success (Basri and Zorlu, 2020). Thus, this outcome may be attributed to the fact that mid-level managers tend to evaluate organizational agility more strategically, at a macro and managerial level.

In our study, no significant difference was found between gender-a demographic variable-and perceptions of organizational agility. Similar results were also obtained in the studies conducted by Sağır and Gönülölmez (2019) and Sever and Paksoy (2021).

In our study, no significant difference was found between educational level-a demographic variable-and perceptions of organizational agility. It could be expected that there would be a meaningful relationship and a higher perception level between educational attainment and organizational agility. This expectation is based on the assumption that as the level of education increases, individuals' ability to adapt to technological developments, changing environments, and working conditions-as well as their capacity to acquire and learn new information-may be directly related. In a study conducted by Rasheed et al. (2023), it was reported that organizational agility scores increased with higher levels of education (Demirler, 2024). However, in line with the findings of our study, Sağır and Gönülölmez (2019) also found no significant difference in organizational agility levels based on educational background.

In our study, no significant difference was found between the length of service (tenure) in the institution-a demographic variable-and perceptions of organizational agility. However, in one study in the literature, a significant difference was found in the flexibility and speed dimensions of organizational agility based on job tenure (Sever and Paksoy, 2021). On the other hand, in a study conducted by Bek Yağmur and Aydıntuğ Myrvang (2023) on healthcare workers' levels of organizational agility, crisis management, and organizational resilience, no difference was found between length of service and organizational agility, which is consistent with the findings of our study.

4. CONCLUSIONS

The coronavirus pandemic has emerged as a crisis affecting every sector with the most radical and economic damage the world has experienced recently. As mentioned in the literature, the pandemic is a concrete example of the VUCA world (Özen and Koç, 2021). In the VUCA world, defined as the new normal, change occurs in a continuous and unpredictable way. Therefore, the traditional management styles that businesses have always applied are no longer sufficient to cope with this new world order, so they need to switch to new management paradigms. At this point, agility and

agile organizational structure are the management philosophy that will make businesses dynamic in the face of this unknown change. Therefore, agility, which is essential for all businesses, has become a subject that should be focused on by private health insurance companies and therefore insurance companies, whose importance and demand have increased with the pandemic. In this context, our study investigated whether there is a difference between the organizational agility level of insurance companies and the organizational agility perceptions of employees in relation to their sociodemographic characteristics. A significant difference was found between organizational agility according to age and the position (status) worked in. Therefore, these hypotheses were accepted; other hypotheses (gender, education level, length of service in the institution) were rejected. The level of organizational agility was also determined to be high (3.92). The high perception of organizational agility after the pandemic in our study findings can be expressed as insurance companies attach importance to the concept of agility in this sense and organize and/or will organize their ways of doing business accordingly. Although the study was conducted with a limited number of participants, it is recommended that it be examined with different variables in larger sample groups in order to contribute to the literature.

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