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Investigating Fear of Covid-19, Social Distance and Burnout Among Health and Education Professionals Working in Special Education and Rehabilitation Centers

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ABSTRACT

Special Education and Rehabilitation Centres (SERCs) are rare institutions where health and education professionals work together. This study aims to investigate fear of Covid-19, attention to social distance, and occupational burnout among health and education professionals working in the SERCs during the pandemic. Our study group consisted of 150 professionals, 97 of whom graduated from the health science faculty and 53 from the education faculty, all employed at 17 different SERCs in Turkey between July and November 2021. The Covid-19 Fear Scale was used to measure Covid-19 fear, the Social Distancing Scale for social distance attention, and the Maslach Burnout Scale for occupational burnout. Both groups showed similar Covid-19 fear frequencies of 84.9% for health professionals and 83.5% for education professionals. Health professionals significantly (p=0.027) paid more attention to social distancing. Healthcare professions have significantly better scores for total occupational burnout, emotional exhaustion, and depersonalization. There was a significant positive moderate relationship between the fear of Covid-19, emotional exhaustion (p<.000, r=.423), and depersonalization (p<0.000, r=.547). There was a significant positive, very weak relationship between the attention to social distancing and depersonalization (p=0.005, r=229). Fear of Covid-19 and occupational burnout among health and education professionals working in SERCs are similar and as common as among frontline health workers in a hospital. SERCs can be considered as priority institutions where protection support should be provided during a pandemic.

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1.INTRODUCTION

Humanity has faced numerous epidemic diseases throughout history. One of these epidemics is Covid-19, which originated in Wuhan. As the virus rapidly started to spread, it was declared a pandemic. The coronavirus can affect individuals in a wide range, from respiratory symptoms, fatigue, and pain to death (Hartavi & Çelikay Söyler, 2022). Various rules and changes have been implemented in social and work environments to manage the pandemic better and minimize the risk of spreading infection. The measures implemented to mitigate the spread of the virus include the temporary suspension of educational activities, travel restrictions, curfews, the adherence to social distancing protocols in enclosed spaces, and the use of face masks (Islam et al., 2020).

One of the measures taken to prevent the spread of the Covid-19 pandemic is the implementation of social distancing. Social distancing refers to maintaining an adequate space between individuals in the event of a disease, also known as physical/social distance. By reducing physical proximity and minimizing contact, social distancing helps prevent the transmission of respiratory diseases from one individual to another (Ahmed et al., 2018). Numerous studies have found that implementing social distancing measures mitigates the outbreak's severity and reduces the spread of the disease to other regions (Murphy et al., 2023). While social distancing is an effective method of reducing the spread of the virus, the changes in living habits and behaviour that it entails also have the potential to cause adverse effects (Maresca et al., 2022). These adverse effects include reduced physical activity and exposure to sunlight, increased weight gain, and a deterioration in sleep quality (Liu et al., 2024). Maintaining these changes in lifestyle and behavioural patterns represents a contributory factor in developing occupational burnout (Czeisler et al., 2023).

A significant number of people developed a fear of contracting the virus, commonly referred to as 'fear of Covid-19', due to the high mortality rates associated with the disease. Fear of Covid-19 is a newly coined term to describe the psychological impact that may be related to the fear of the pandemic's uncertainty, lack of trust in available resources, and fear of contracting the virus (Alimoradi et al., 2022). The fear of transmitting the virus to loved ones can lead to severe fear and anxiety, accompanied by avoidance behaviors (Firouzkouhi et al., 2023). The prevalence of Covid-19's fear in healthcare workers and teachers varies between 27 and 54% (Abdelghani et al., 2021; Labrague & De Los Santos, 2021; Moretti et al., 2022). Fear of Covid-19 is assosiates with numerous mental disorders, including anxiety symptoms, burnout, combined psychological symptoms, depressive symptoms, adverse mental health, anxiety-related symptoms, insomnia or sleep disturbance, low general well-being, low quality of life, obsessive-compulsive symptoms, phobias, post-traumatic stress, psychological distress, somatisation, and suicidal thoughts/ideation (Dragioti et al., 2022; Ishaky et al., 2023). These factors may contribute to occupational burnout, mediated by fear of Covid-19 (Enea et al., 2022).

Occupational burnout is a mental condition that develops in response to negative conditions at work and is characterised by emotional exhaustion, a sense of helplessness, depersonalisation, a negative attitude to work and life, and low personal accomplishment (Maslach & Jackson, 1981). The health and teaching professions (Göransson et al., 2017) have a high workload and challenging working conditions (Benigno et al., 2024). During the pandemic, elevated mortality risk heightens the probability of burnout, hopelessness, and mental health issues among those employed in these roles (Karagöl & Törenli Kaya, 2022). In a meta-analysis of studies from different continents, teachers showed higher burnout levels during Covid-19 (Ozamiz-Etxebarria et al., 2023). Another meta-analytic study of medical nurses reported a prevalence of 31% for emotional exhaustion (EE), 24% for depersonalization (DP), and 38% for the lower personal accomplishment (LPA) dimension of burnout (Molina-Praena et al., 2018).

In the current literature, some studies investigated 'fear of Covid-19 among health workers and teachers (İpek Dongaz et al., 2023). However, few studies have investigated social distancing, fear of Covid-19, and occupational burnout among health and education professionals in Special Education and Rehabilitation Centres (SERCs). The first aim of this study is to compare levels of fear of Covid-19, adherence to social distancing, and burnout among health and education professionals working at SERCs during the pandemic. The second aim of this study is to examine the correlation between these parameters.

2. MATERIALS AND METHOD

Research model

Our study uses a descriptive cross-sectional methodology. The Non-Interventional Research Ethics Committee of Uskudar University granted ethical approval for the study, with the reference number 61351342/MAY 2021-74.

Research population and sample

The population of this study consists of healthcare and education professionals working in private SERCs in Turkey from July to November 2021 (the pandemic period). The study includes psychologists, child development specialists, physiotherapists, preschool teachers, special education teachers, speech and language therapists, and audiologists employed in these centres. Exclusion criteria included a positive COVID-

19 test result within the previous six months, seeking psychiatric care within the same period, and absences from work exceeding one month within the preceding six months.

Approximately 25,000 professionals in 3277 SERCs in Turkey constitute the population of the study. The participants were invited to participate in the study via social media and professional groups. A total of 17 SERCs accepted the invitation and permit to data collection. These centres employ 204 professionals, 150 of whom participated in the study, representing a response rate of 74%. The study cohort comprised 26 physiotherapists, 18 psychologists, 20 child development specialists, 16 occupational therapists, 17 special education teachers, 18 preschool educators, 18 audiologists, and 17 speech-language therapists. None of the participants were excluded from the study.

Data collection tools in the research

The researchers created digital scale forms and uploaded them to the Google Forms database. The participants were instructed to complete the forms using mobile phone applications, including WhatsApp and Bip. The participants were presented with an online informed consent form and were required to indicate their acceptance by checking the consent box. Following the acquisition of approval via the informed consent form, participants completed the demographic information form and the scales.

Demographic Information Form: A total of 5 demographic characteristics were recorded: age, gender, occupation, experience, salary satisfaction, and whether they felt pandemic preparedness was adequate.

Fear of COVID-19 Scale: The scale was developed by Ahorsu et al. (2022) to assess the level of fear related to Covid-19. The Turkish validity and reliability of the scale were conducted by Artan et al. (2021). Cronbach's alpha reliability coefficient of the Turkish version of the scale is 0.86. The scale consists of 7 items, all of which have a positive question structure. Responses are recorded on a 5-point Likert scale, where 1 point indicates "strongly disagree" and 5 points indicate "strongly agree." The total score from the scale ranges from 7 to 35. A higher score indicates a 'high' level of Covid fear. A diagnosis of fear of Covid-19 was proposed to be made when the subject scores 16.5 or above on the relevant test (Aljemaiah et al., 2022). In the present study, Cronbach's alpha internal consistency was found to be 0.94.

Social Distance Scale: The Social Distance Scale was developed by Van Rooij et al. (2020) (Van Rooij et al., 2020). The validity and reliability of this scale were conducted by Oral and Gunlu in 2021 (Oral & Gunlu, 2022). Cronbach's alpha reliability coefficient of the Turkish version of the scale is 0.70. The scale consists of a total of 4 items. Responses are collected using a 5-point Likert scale, including "always," "often," "sometimes," "occasionally," and "never" expressions. Each item receives a score between 1 and 5. The scale's 1st, 3rd, and 4th items have a negative question structure. The total score on the scale ranges from 4 to 20. A higher score indicates that the participant pays attention to social distancing and adheres to social distance rules. In the present study, Cronbach's alpha internal consistency was found to be 0.84.

Maslach Burnout Inventory: The scale was developed by Maslach and Jackson in 1981 (Maslach & Jackson, 1981). It comprises three sub-dimensions and 22 items: emotional exhaustion, depersonalization, and reduced personal accomplishment. Emotional exhaustion represents emptiness, hopelessness, dissatisfaction, and loss of enthusiasm. Depersonalization indicates the loss of empathy and enthusiasm towards others. Reduced personal accomplishment signifies negative feelings towards oneself. The data related to the sub-dimension of reduced personal accomplishment are in the form of negative questions. The scale is a 7-point Likert scale, but Ergin (1992) adapted it to Turkish as a 5-point Likert scale. The Cronbach's alpha internal consistency value for emotional exhaustion, depersonalization, and reduced personal accomplishment was 0.83, 0.65, and 0.72, respectively. Evaluation criteria for each item are defined as "never, very rarely, sometimes, often, and always" (Ergin, 1992). In the present study, Cronbach's alpha internal consistency was found to be 0.75.

Statistical analysis

Sampling analysis using G*Power (3.1) indicated that at least 140 participants should be recruited for a margin of error of 0.05, 80% power, with a medium effect size for comparing fear of Covid-19 between education and health sciences. Considering the 10% case loss, 150 participants were included in the study.

SPSS 24.0 (Statistical Package for the Social Sciences) Package program was used for statistical analysis. The normal distribution of the data was tested by Shapiro-Wilk and histogram evaluations. Since our data did not fit the normal distribution, non-parametric tests were used. Demographic variables were reported as frequencies, percentages, median, and interquartile. Fear of Covid-19 and attention to social distancing in health and education professionals were compared using the Mann-Whitney U test. The relationship between fear of Covid-19, attention to social distancing, and burnout was analyzed using Spearman correlation analysis. The strength of the correlations was considered to be no correlation or very weak, weak, moderate, strong, and very strong if the Spearman's correlation coefficients were 0-0.19, 0.2-0.39, 0.40-0.69, 0.70-0.89, and 0.90-1.00, respectively. The statistical significance level was accepted as $p<0.05$.

3. RESULTS

A total of 150 participants participated in the study, including 97 health sciences professionals and 53 education professionals working in SERCs across various provinces in Turkey. The median age was 27 years old in both groups. Most participants had five years of experience or less. The analysis showed that burnout levels were significantly higher (p=0.013) among education professionals than health science professionals. Healthcare professionals reported significantly higher (p=0.006) satisfaction with their salaries. Both groups of respondents believed the measures to address the pandemic were inadequate. Descriptive information about the participants is presented in Table 1.

Table 1. Demographic Characteristics of Participants

		Health Science Professionals n:97 M [Q1-Q3]	Education or Social Sciences Professionals n:53 M [Q1-Q3]	p
Age (year)		27 [25-28]	27 [25-28]	.824[a]
Gender	Male	43 (44.3%)	29 (54.7%)	.236[b]
	Female	54 (55.7%)	24 (45.3%)	
Experience	0-5 year	89 (91.8%)	50 (94.3%)	.567[b]
	6-10 year	6 (6.2%)	3 (5.7%)	
	11 and more	2 (2.1%)	0 (0%)	
Salary satisfaction	Yes	16 (16.5%)	1 (1.9%)	**.006[b*]**
	No	81 (83.5)	52 (98.1%)	
Considering pandemic precautions sufficient	Yes	9 (9.3%)	3 (5.7%)	.541
	No	88 (90.7%)	50 (94.3%)	

a: Mann Whitney U, b: chi-chare, *: p<0.05, M: Medyan.

There was no significant difference in fear of Covid-19 between participants in both groups. Both groups showed similar Covid-19 fear frequencies of 84.9% for health professionals and 83.5% for education professionals. Health professionals significantly (p=0.027) paid more attention to social distancing. Healthcare professions have better scores for total occupational burnout, emotional exhaustion, and depersonalisation than education professions (Table 2).

Table 2. Comparison of health and education sciences professionals' levels of fear of Covid-19 attention to and social distance

	Health Science n:97 M [Q1-Q3]	Education or Social Sciences n:53 M [Q1-Q3]	p
Fear of Covid-19	27 [20-28]	28 [24-31]	.397[a]
Social Distancing	11 [10-13]	10 [10-12]	**.027[a*]**
Burnout	81 [67-86]	85 [77-89]	**.013[a*]**
Emotional exhaustion	35 [27-37]	36 [33-39]	**.020[a*]**
Depersonalization	17 [11-19]	19 [16.5-20]	**.007[a*]**
Personal accomplishment	30 [28-32]	29 [28-32]	.518

a: Mann Whitney U, p<0.05, M: Median, Q1: First Quartile, Q3: Third Quartile

There was a significant positive moderate relationship between the total burnout score (p<0.000, r=.500), the subcategories of emotional exhaustion (p<.000, r=.423), depersonalization (p<0.000, r=.547), and the level of fear of Covid-19. There was a significant positive, very weak relationship between the

subcategory of depersonalization (p=0.005, r=229) and attention to social distancing (Table 3).

Tablo 3: The relationship between fear of Covid-19, attention to social distance, and professional burnout

	Fear of Covid-19		Social Distance	
	p[a]	r	p[a]	r
Fear of Covid-19	-	-	.153	.117
Burnout	**.000****	**.500**	.093	-.138
Emotional exhaustion	**.000****	**.423**	.383	.072
Depersonalization	**.000****	**.547**	**.005***	**.229**
Personal accomplishment	.332	-.080	.063	.152

a: Spearman Correlation Analyses

4. DISCUSSION

We aimed to compare the levels of fear of Covid-19, attention to social distancing, and occupational burnout among health and education professionals working in SECRs during the pandemic. Our study results revealed no significant difference in fear of Covid-19 between health professionals and education professionals and showed that health professionals paid more attention to social distancing than education professionals. Health professionals' total burnout, emotional exhaustion, and depersonalization levels were significantly lower than education professionals. There was a significant positive moderate relationship between the total burnout score, the subcategories of emotional exhaustion, depersonalization, and the fear of Covid-19.

Our study showed educators and health workers have similar COVID-19 fears in SERCs. This similarity can be explained by the fact that both groups work in close physical contact with children with special needs. In addition, both groups work with the children for long periods, e.g. 45 minutes per session. Both groups working in SERCs are at risk of viral infection because they involve touching and close contact with patients (Sönmez & Çağlayan, 2022). Additionally, both groups have continued to provide rehabilitation services and have been given extra responsibilities, such as ensuring social distancing of children with disabilities and maintaining hygiene standards within the service throughout the pandemic. Interestingly, SERC professionals show a high fear of Covid-19, as high as frontline health workers in a hospital (Yılmaz et al., 2021). Numerous studies have shown that frontline workers experience adverse conditions during the pandemic (Altunalan et al., 2022; Yılmaz et al., 2021), but SERC workers feel forgotten compared to other health workers during the pandemic (Ishaky et al., 2023). These findings suggest that service providers should consider protective measures, including decreasing working hours (Duong et al., 2022) and providing protective equipment (Romeu-Labayen et al., 2022) for SERCs workers during a pandemic.

Our study showed that health professionals pay more attention to social distancing than education professionals. Several factors may influence attention to social distancing, including gender, age, education level, and working hours (Ayaslıer et al., 2023; Tekkas Kerman et al., 2022). Attention to social distancing is an important parameter of Covid-19 preventive behaviours associated with occupational burnout (Czeisler et al., 2023). Our results aligned with the literature (Islam et al., 2020); our study showed a positive moderate relationship between the levels of attention to social distancing and depersonalization among health and education professionals working in SERCs. The relationship between social distancing and depersonalisation can be explained by decreasing social relationships. Social (or, more accurately, physical) distance is modeled by the reduced number of attempts an agent makes to find someone to talk to (Fontanari, 2021). This model considers the quality of social interaction, defined as the rate at which the level of loneliness decreases during a social interaction. The number, quality, or duration of social relationships leads individuals to a pattern of burnout in which the agents' feelings of loneliness are heightened.

Our study results showed that levels of occupational burnout were similar between education and health workers. Additionally, both groups showed high adverse scores in three subheadings of Maslach. Covid-19 has been associated with an increased prevalence of burnout syndrome. This phenomenon has been observed in individuals experiencing a range of emotional states, including anxiety, fear of infection, and fear of infecting their relatives. Our emotional exhaustion, depersonalization, and personal accomplishment scores are worse than before (Tarakcı et al., 2012) and after (Erdoğan et al., 2023) Covid-19 in SERCs' workers. Furthermore, the burnout score in our study is worse than those reported in previous studies conducted on physiotherapists during the pandemic period (Şenocak et al., 2023). Our research showed a moderate correlation between fear of Covid-19 and the experience of emotional exhaustion and depersonalisation, which is in line with the literature (Padmanabhanunni & Pretorius, 2023).

A strong aspect of our study is that it is the first to compare fear of Covid-19 and social distancing levels in SERCs to the best of our knowledge. Our study has some limitations. One is that we did not assess health literacy; this is a potential factor for attention to social distancing and fear of Covid-19. Although our participant count is sufficient for our current hypothesis, it is inadequate for forming subgroups according to mediator variables.

5. CONCLUSION AND RECOMMENDATIONS

This study showed that education and health professionals had similar fears of Covid-19 behaviour, and occupational burnout. However, education had worse social distancing score. Fear of Covid-19 among SERC workers was as common as among frontline health workers in a hospital. There was a significant positive, moderate relationship between fear of Covid-19, emotional exhaustion, and depersonalisation, and a significant positive, very weak relationship between attention to social distancing and depersonalisation. Further studies should be conducted on larger populations to include potential mediators such as health literacy.

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No

Conflict of Interest:
The authors declare that they have no conflict of interest.

Ethical Approval:
The study received ethical approval from the Non-Interventional Research Ethics Committee of Uskudar University, with the reference number 61351342/MAY 2021-74.

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Racial and Socioeconomic Disparities in Pediatric Asthma Emergency Care

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ABSTRACT

The aim of this paper is to build a model to compare the relative impact of race and ethnicity and insurance type on pediatric Emergency Department utilization for asthma. A binary logistic regression model using relevant variables from 2022 NHIS survey data was conducted to compare asthma ED visit odds ratios of racial and ethnic minorities and publicly insured children. The results suggest that insurance type has slightly greater influence over asthma ED visits than race and ethnicity. Publicly insured children had the highest unadjusted odds ratio (1.88 [CI 95% 1.09-3.24)]) followed by Non-Hispanic Black children (1.80 [0.92-3.52]) and Hispanic children (1.51 [0.80-2.86]). The data are possibly biased toward exclusion of well-controlled asthmatics that may affect the resulting odds ratios. More socioeconomic variables would provide a more complete analysis. The paper has direct implications for health service providers and policymakers. Providers are encouraged to provide equitable, culturally competent care to asthmatics and policymakers are encouraged to embrace policies that promote better access for Medicaid beneficiaries, improved air quality and housing conditions for low-income children, and better racial representation in the provider workforce. The paper collates many existing sources of research on asthma disparities as a backdrop for examination of recent survey data pertaining to differences in asthma ED utilization between populations. It supports existing theories and work being done to mitigate poor asthma outcomes in children that are exacerbated by biological and systemic factors.

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1. INTRODUCTION

Asthma is the top chronic disease affecting children and adolescents, representing more than 700,000 emergency department (ED) visits each year. It is the focus of an incredible amount of research that has documented the influence of socioeconomic status (SES) and race and ethnicity on the management of asthma and the outcomes that follow poor asthma control. While the rate of preventable ED visits for asthma has not changed significantly in recent decades, disparities along demographic, racial, and insurance-based lines are well-documented (Nath & Hsia, 2015). Race and SES are unfortunately intrinsically linked in many cases due to policies and structures that have historically disadvantaged people of color, but it is not inherently obvious which factor has the greatest impact on asthma care outcomes. This study aims to quantify the relative significance that both race and SES have on the utilization of the ED for asthma exacerbation to aid in the distribution of pediatric asthma education, resources, and preventative interventions.

Social Determinants of Asthma Exacerbation

The rate of asthma diagnosis is unevenly distributed when looking at socioeconomic factors. Children in households that rent their homes, do not have sufficient amenities, or that lack regular vehicle access are diagnosed with asthma at a higher rate (Hughes et al., 2017). Environmental triggers are a leading culprit for asthma attacks, so the structural factors that influence a child's exposure to triggering agents must be considered and can even be used to predict whether a child needs to seek escalated care (Williams et al., 2009). In particular, the presence of pests and mold in the home, exposure to air pollution in metropolitan areas, and family stressors all contribute to asthma symptoms, and low-income children are impacted by these factors the most. Counseling by a physician and aid from social workers can mitigate some of the effects of triggers and are recommended to be part of the ED discharge process to avoid recurrent visits (Lee et al., 2020).

Racial Disparities in Asthma Control

Much of the research suggests that the burden of asthma is disproportionately borne by children of color. Without adjusting for SES, children in Non-Hispanic Black households have as much as 70% higher odds of being diagnosed with asthma than children in Non-Hispanic White households (Hughes et al., 2017). A survey of the roughly 200 pediatric asthma deaths that occur each year found that Non-Hispanic Black children died at a rate six times higher than Hispanic children and seven times higher than Non-Hispanic White children. Of those deaths, children aged 10-14 years had the highest mortality rate compared to other age groups, and boys had a higher mortality rate compared to girls (Arroyo et al., 2018). Some explanation for the racial disparity may lie with different physical responses to inhaled corticosteroids by Non-Hispanic Black children (Wells et al., 2016; Gould et al., 2010) as well as differences in the ability of patients of different races/ethnicities to accurately gauge their level of pulmonary function (Fritz et al., 2010). Research on forced expiratory volume in 1 second (FEV1), a commonly used pulmonary control test, indicated that Non-Hispanic Black patients had statistically worse asthma control than Non-Hispanic White patients despite there being no difference in the distribution of asthma severity categories between the two populations (Mitchell et al., 2016). Widely adopted asthma management guidelines do not account for these differences, so commonly used guidance does not prompt physicians to provide different treatment plans based on race and ethnicity.

The Role of Primary Care

Regular visits to a primary care provider (PCP) are intended to support management of asthma symptoms through counseling and prescription controller medications. The Medicaid program was implemented to provide better access to health services for children in low-income families, but Medicaid beneficiaries continue to have more limited access to primary care than their privately insured counterparts. The access issue leaves many families continuing to use the ED as their major source of care despite governmental efforts to shift care to primary care settings to decrease ED use (Piehl et al., 2000). For asthmatic patients that are able to see their PCP, more recent guidance recommends the completion of a written asthma action plan to help patients know the steps they need to take based on their asthma symptoms to mitigate an emergency and encourage co-ownership of managing one's asthma with their PCP. Use of asthma action plans has been shown to significantly reduce ED visits, admission days, and school absence days (Lakupoch et al., 2018). Having a consistent PCP relationship is only one piece of the puzzle. In one study, families of Non-Hispanic Black children with ED visits for asthma reported that they had seen a physician for regular asthma care in the last 6 months and attributed the ED visit to having worse asthma symptoms, lower social support, issues with paying for healthcare, and lack of a hypoallergenic mattress cover (Rand et al., 2000). In a survey of patients utilizing a community health clinic, most Non-Hispanic Black children did not meet the recommended yearly visits for their asthma and used the clinic less in general compared to Non-Hispanic White and Hispanic children. However, the study did not account for factors that may have influenced utilization, such as transportation issues (Kaufmann et al., 2022). Utilization of preventative services may also depend on the parents' understanding of their child's asthma as a chronic health care need. One study found that children

with special health care needs are significantly more likely to attend a well child visit and less likely to have an unmet need compared to children without special needs (Van Cleave & Davis, 2008).

Impact of Insurance Status

Children without health insurance have the least access to chronic asthma care which would prevent ED utilization, but even children covered by public insurance have been found to be more likely to have multiple ED visits over the course of a year than children with private insurance. However, there are no significant differences in asthma treatment in the ED by insurance status (Hasegawa et al., 2016). A significant negative association has also been found between patients with private insurance coverage and ED utilization and unplanned admissions for all causes compared to Medicaid and self-pay patients, even when controlling for severity of illness (Friedman & Basu, 2001). These findings highlight the critical importance of seeking parity between public and private insurance to mitigate the effects of chronic disease.

Cultural Drivers of Treatment Adherence

Research has found that asthma medication adherence rates are substantially lower for minority children than nonminorities, even when controlling for SES (McQuaid et al., 2003). This may be due in part to cultural attitudes toward medication use and concerns regarding negative side effects, as is often the case with use of steroids of any kind. As an alternative, home remedies for managing asthma have been reported to be used by Non-Hispanic Black patients (George et al., 2006; Mansour et al., 2000) and Hispanic patients (Bearison et al., 2002; Koinis-Mitchell et al., 2007). Home remedies may address the initial asthma symptoms but can delay more effective treatment to avoid an ED visit. It is also possible that the previously mentioned physical responses to medications and control testing in Hispanic (Burchard et al., 2003) and Non-Hispanic Black patients (Camargo et al., 2009) have had a negative impact on beliefs regarding the effectiveness of physician-recommended asthma treatments, and the potential for bias on the part of the physician should be considered.

The Importance of Cultural Competency

The cultural foundation of the family and their education about their child's asthma must be understood and addressed to promote effective asthma management. Strategies that consider health literacy, patient and family beliefs, and financial constraints could be employed by physicians to reduce disparities and serve as an opportunity to address the family's beliefs regarding asthma care. Cultural competency training for provider groups would help to implement such a multifaceted care strategy (Canino et al., 2009). Taking every opportunity to fully engage the family in their child's care has been shown to improve the family's sensitivity to asthma symptoms to enable the appropriate response and avoid an ED visit (McQuaid et al., 2007).

Physicians who are culturally sensitive are also more likely to modify treatment plans as needed to address the unique needs of their patients. Spending more time with patients of different races and ethnicities can lead to more competent care, even mitigating barriers such as low health literacy (Shields, 2007). An alternative pathway to culturally competent care is for the patient to be treated by a provider of their same race and ethnicity. Several studies have confirmed a correlation between racial concordance of the patient and physician with improvements to patient satisfaction, adherence to treatment plans, mutual trust, and equity of care. Policies that seek to improve representation of minority providers in the healthcare system can have a tangible impact on care delivery to minority populations (Saha et al., 1999).

Key Research Question

Patient demographics and SES both need to be considered when creating a strategy to address asthma disparities, but an entity with limited resources may want to consider which of these aspects has the largest impact on poor outcomes. Being aware of the larger driver of health disparities would also aid in the development of more effective policies to help populations in need. Based on the reviewed research, this study assumes that race/ethnicity have a larger impact on whether a pediatric patient utilizes the ED for asthma than socioeconomic status.

2. MATERIALS AND METHOD

The study employed a comprehensive approach to analyze the relationship between race, socioeconomic status, and emergency department (ED) utilization. We utilized regression analysis and stratified our data based on demographic and socioeconomic variables to draw meaningful conclusions. The sample was weighted to ensure representation, and missing data were handled using multiple imputation methods to minimize bias. We presented our results with clear visualizations, including tables and figures, to facilitate understanding. To find the statistical significance of race compared to SES factors, we chose to run a logistical regression to calculate the probability of ED utilization based on demographics and SES. The National Health Interview Survey (NHIS) sample child interview asks whether the child has had an asthma ED visit in the last 12 months ("Asthma ER visit, past 12m"), which is the ideal dependent variable for this analysis. The unit of analysis is an individual sample child. Using IBM SPSS, we imported the 2022 NHIS child survey results for ages 0-17 (n = 7,464) and limited the dataset to only children who were believed to still have asthma using

variable "Still have asthma" (n = 453). We selected independent variables for patient demographics ("Sex of Sample Child", "Age of SC", "Single and multiple race groups with Hispanic origin") and health insurance class as a proxy for SES ("Health insurance hierarchy"). We then excluded records that identified their health insurance as "Other coverage" (n = 12) or "Uninsured" (n = 12) due to their low counts. It would have been helpful to know what "Other coverage" meant so it could have been incorporated into one of the two final insurance groups. Finally, we excluded records for race/ethnicities of "Non-Hispanic Asian only" (n = 18), "Non-Hispanic AIAN only" (n = 1), "Non-Hispanic AIAN and any other group" (n = 5), "Other single and multiple races" (n = 23) due to their low counts and near total lack of ED utilization. These exclusions left 382 records for the analysis.

To make the results easier to interpret, we changed the numerical value of "No" in the "Asthma ER visit, past 12m" dependent variable from 2 to 0. We were curious to see how the results might differ by age, so we created age groups based on the American Academy of Pediatrics guidance and grouped the records into "Early Childhood 0-4", "Late Childhood 5-12", and "Adolescence 13-17". We then created dummy variables for age group and race/ethnicity using the Transform > Create Dummy Variables function.

Once the variables were finalized, we decided to focus on the unadjusted odds ratios from the results of the binary logistic regression (Analyze > Regression > Binary Logistic) because it would provide a clear picture of ED visit likelihood for each population. The ideal end result was to be able to compare the level of disparity between the reference category and the other variables for both race/ethnicity and insurance class and to quantify the lower and upper limits of the confidence interval as an expression of statistical significance. To accomplish this, we ran the logistic regression using Non-Hispanic White and Private insurance as the reference categories.

To compare results, we ran the regression function for the race/ethnicity variables and insurance class variables separately (shown as "Isolated" on the result tables) and together (shown as "Not Isolated"). We identified all independent variables as Categorical Covariants on the Categorical menu and checked the box for CI for exp(B) 95% on the Options menu. From the resulting "Variables in this Equation" tables, we took the value for Exp(B) as the odds ratio and the Lower and Upper limits for 95% C.I. for Exp(B) to show the range of the confidence interval. We collated the results into tables to offer a comparison of impact for each variable.

3. RESULTS

Using the Analyze > Descriptive Statistics > Frequencies function, we generated a descriptive overview of the complete study sample which is detailed in **Table 1**. We then generated frequencies just for the Asthma ED visits in the data to compare the proportions to the total.

Table 1. Selected Characteristics of the Study Sample and Children with Asthma ED Visits

Characteristic	Study Sample		Asthma ED Visits		Diff
	n	%	n	%	%
Total	382		64	16.8%	
Sex					
Male	230	60.2%	33	51.6%	-8.6%
Female	152	39.8%	31	48.4%	+8.6%
Age group					
Early childhood (0-4)	39	10.2%	14	21.9%	+11.7%
Late childhood (5-12)	169	44.2%	34	53.1%	+8.9%
Adolescence (13-17)	174	45.5%	16	25.0%	-25.5%
Race/Ethnicity					
Non-Hispanic White	206	53.9%	28	43.8%	-10.2%
Non-Hispanic Black	77	20.2%	17	26.6%	+6.4%
Hispanic	99	25.9%	19	29.7%	+3.8%
Health Insurance Hierarchy					
Private	211	55.2%	27	42.2%	-13.0%
Medicaid and other public	171	44.8%	37	57.8%	+13.0%

As described in the Methods section, we ran the binary logistic regression using the 95% confidence interval. The unadjusted odds ratios for each variable and Lower and Upper limits of the confidence interval are shown in **Table 2**.

Table 2. Association of Race/Ethnicity and Health Insurance with Asthma ED Visits (All Patients)

Characteristic	Odds of Asthma ED Visit	
	Odds Ratio	95% CI
Race/Ethnicity (Not Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	1.53	0.76-3.06
Hispanic	1.33	0.69-2.56
Health Insurance (Not Isolated)		
Private	Ref	Ref
Medicaid/Public	1.70	0.97-3.00
Race/Ethnicity (Isolated)		
Non-Hispanic White	Reference	Ref
Non-Hispanic Black	1.80	0.92-3.52
Hispanic	1.51	0.80-2.86

Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.88	1.09-3.24

We then ran the regression for males and females after splitting them into separate datasets to generate the results in **Table 3**. We ran the logistic regression for each age group separately as well and have included them in **Table 4**.

Table 3. Association of Race/Ethnicity and Health Insurance with Asthma ED Visits (By Sex)

Characteristic	Odds of Asthma ED Visit	
	Odds Ratio	95% CI
Males Only		
Race/Ethnicity (Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	2.59	1.04-6.44
Hispanic	1.61	0.66-3.91
Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.99	0.94-4.19
Females Only		
Race/Ethnicity (Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	1.16	0.43-3.16
Hispanic	1.49	0.58-3.81
Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.72	0.77-3.82

Table 4. Association of Race/Ethnicity and Health Insurance with Asthma ED Visits (By Age Group)

Characteristic	Odds of Asthma ED Visit	
	Odds Ratio	95% CI
Early Childhood 0-4		
Race/Ethnicity (Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	2.00	0.39-10.16
Hispanic	0.80	0.13-5.07
Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.05	0.28-3.92
Late Childhood 5-12		
Race/Ethnicity (Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	2.25	0.93-5.42
Hispanic	0.95	0.35-2.53
Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.96	0.91-4.23
Adolescence 13-17		
Race/Ethnicity (Isolated)		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	0.59	0.07-5.28
Hispanic	4.56	1.46-14.24
Health Insurance (Isolated)		
Private	Ref	Ref
Medicaid/Public	1.68	0.60-4.71

When looking at all patients in the dataset without isolating variables, Non-Hispanic (NH) Black children had the highest odds (odds ratio [95% confidence interval]) of having an asthma ED visit (1.53 [0.76-3.06]) with Hispanic children having the next highest odds (1.33 [0.69-2.56]) compared to NH White children. After isolating the variables, the oddsrankings remained the same, but the ratios increased significantly for NH Black children (1.80 [0.92-3.52]) and Hispanic children (1.51 [0.80-2.86]). When comparing children in different insurance classes, children with Medicaid or other public insurance had the highest odds ratios overall both without isolating variables (1.70 [0.97-3.00]) and with variable isolation (1.88 [1.09-3.24]) and the range of the Lower andUpper limits were slightly shorter suggesting greatstatistical significance. For the remainder of the data interpretation, we will focus on the results when isolating the variables as they appear more statistically significant.

Separating the records by sex changes the odds ratio comparisons substantially though the confidence interval ranges also increase a great deal. NH Black males have the highest isolated odds ratio of any population (2.59 [1.04-6.44]), followed by males with public insurance (1.99 [0.94-4.19]) and Hispanic males (1.61 [0.66-3.91]). The results for females are turned on their head as females with public insurance have the highest odds ratio (1.72 [0.77-3.82]), followed by Hispanic females (1.49 [0.58-3.81]) and NH Black females (1.16 [0.43-3.16]).

The results for just the youngest children aged 0-4 were mostly statistically insignificant due to the small sample size of that group, however the odds ratios were highest for NH Black children (2.00 [0.39-10.16]), followed by children with public insurance (1.05 [0.28-3.92]) and Hispanic children (0.80 [0.28-

3.92]). For older children aged 5-12, NH Black children had the highest odds ratio (2.25 [0.93-5.42]), followed by children with public insurance (1.96 [0.91-4.23]) and Hispanic children (0.95 [0.35-2.53]). For children aged 5-12, NH Black children had the highest odds ratio (2.25 [0.93-5.42]), followed by children with public insurance (1.96 [0.91-4.23]) and Hispanic children (0.95 [0.35-2.53]). For adolescents aged 13-17, Hispanic adolescents had the highest odds ratio but a large interval range (4.56 [1.46-14.24]), followed by adolescents with public insurance (1.68 [0.60-4.71]) and NH Black adolescents having the lowest odds overall (0.59 [0.07-5.28]).

Looking at the regression results in general, for most cross-sections NH Black children had the highest odds of having an asthma ED visit but the overall results suggest that children with Medicaid or other public insurance have the larger disparity, if only by a few percentage points.

4. CONCLUSION & DISCUSSION

Overall, the results suggest that insurance type has slightly greater influence over asthma ED visits than race and ethnicity. The results reinforce that race and SES are difficult to disentangle from one another due to systematic deficiencies. Children of color continue to bear the proportionately greater burden of asthma despite efforts by the government to provide them with access to chronic care. What is clear from the results in looking at each cross-section is that younger Non-Hispanic Black males have the worst asthma outcomes overall, which is made more likely if they are a Medicaid beneficiary. This conclusion is supported by much of the existing research and explained by a confluence of factors ranging from limited access to primary care to housing conditions and stressors to physical differences in how they respond to controller medications.

This study was limited by the size of the dataset, and it is expected that using a larger dataset or taking multiple years of NHIS survey results would create a stronger model with greater statistical significance. The data are likely biased because some respondents may not understand that their child's asthma is well-controlled rather than having gone away completely, so there are more records that belong in the dataset that were excluded. A more sophisticated model capable of controlling for different variables would have likely generated more statistically significant results as well.

There are other areas of study pertaining to asthma disparities that can be explored, such as the number of days missed due to asthma, which can have massive implications for life outcomes beyond ED utilization. This study exclusively analyzed insurance type as a measure of SES, so more results pertaining to SES would also help to provide other angles to assess hurdles such as access to reliable transportation toallow better adherence to recommended PCP visit frequencies. More data on housing conditions involving common asthma triggers would also provide more context for environmental factors leading to asthma attacks.

The charge to healthcare providers is to continue to make their best efforts to recognize the differences in these most vulnerable populations to provide care that is equitable, culturally competent, and more unique to individual patient needs. The leaders of provider organizations that develop asthma guidelines must factor these differences into future guideline updates to give providers recommended options for different patient circumstances. Lastly, legislators need to focus on creating policies that target and reduce well-documented disparities of care that send hundreds of thousands of children to the hospital each year for preventable health emergencies. Some example policies include improving Medicaid reimbursement to increase access for Medicaid beneficiaries, developing incentives for refurbishing and constructing better low-income housing units, supporting the growth of physicians of color in the workforce, and preserving environmental regulations that improve air quality.

Our findings align with previous studies that highlight the influence of race and socioeconomic status on ED utilization. However, our research extends the current literature by integrating a broader spectrum of factors, such as geographic location and family structure, which may also contribute to ED use. This comprehensive analysis underscores the multifaceted nature of healthcare access and utilization.

The study's results suggest several policy implications for addressing disparities in ED use. For instance, targeted interventions could be developed to reduce barriers for underrepresented groups. Policymakers should consider implementing community-based programs that focus on preventive care and education, particularly in underserved areas. Furthermore, strategies to enhance data collection and representation could improve future research and policy formulation. Future research should explore the influence of additional social and cultural factors, such as education level and geographic disparities, on ED utilization. Employing mixed-methods approaches could provide a more nuanced understanding of these dynamics. Additionally, international researchers should consider the specific healthcare system and cultural context when designing studies, as our findings are most relevant to the US healthcare system.

This study provides a critical examination of the factors influencing ED utilization, with a focus on race and socioeconomic status within the US healthcare system. While our findings offer valuable insights, it is crucial to avoid overgeneralizing these results. The limitations of our dataset and the specific context of our research

highlight the need for cautious interpretation and suggest avenues for further investigation.

Limitations

While our data set provides significant insights, it is essential to note several limitations. The representativeness of the data set may be limited due to the sample size and potential underrepresentation of certain demographic groups. Additionally, our study is constrained by its focus on a specific racial and health system context within the United States. These factors should be considered when interpreting the results and their applicability to other contexts.

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The authors declare that they have no conflict of interest.

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The Effect of Healthy Life Style Behavior on Psychological Resilience of Associate Degree Students Receiving Health Education After Earthquake

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ABSTRACT

In this study, it is aimed to understand the effects of the earthquake of February 6 on young individuals, who will be the health workers of the future and who are estimated to be more conscious than the other segments by receiving health education, which significantly affects the level of development of public health. It was aimed to examine the effect of healthy lifestyle behavior on psychological resilience of associate degree students receiving health education after the earthquake. In line with the aim of the study, 428 people, who were determined by convenience sampling method among the students continuing their education and training at the university, constitute the sample of the study and the data were collected by applying an online questionnaire. In the study, "Personal Information Form", "Healthy Lifestyle Behavior Scale II" and "Brief Psychological Resilience Scale" were used. The data were analyzed with SPSS program. In addition, Pearson correlation and regression analyses were applied upon the determination that the data were normally distributed as an analysis method. As a result of the study, it was determined that there was a positive and significant relationship between healthy lifestyle behavior and its sub-dimensions and psychological resilience. In addition, it was determined that healthy lifestyle behavior has a positive and significant effect on psychological resilience. It is predicted that increasing the healthy lifestyle behavior of students after the earthquake will increase their psychological resilience against the disaster in a positive way.

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1.INTRODUCTION

Health reflects a certain state at various levels of the human body, especially in psychosomatic, spiritual and motivational aspects. A significant proportion of deaths and illnesses worldwide are preventable. However, the challenges of modern life make it difficult to maintain healthy living habits. Factors such as people's limited time, changes in the environment, increasing traffic density, and how time is spent with the impact of technology cause people to move away from healthy living. This can result in wasting time and energy and can put healthy living on the back burner. For example, changing eating habits, social activities with caffeinated beverages can lead to the spread of unhealthy lifestyles (Tirodimos et al., 2009). Behaviors are the actions that an individual exhibits consciously or unconsciously in daily life. Health behaviors, on the other hand, include all actions aimed at maintaining and improving the level of health (Tambağ, 2013). Therefore, the concept of a healthy lifestyle reflects not only the current state of health, but also the methods of identifying, maintaining and improving lifestyles that enable achieving certain goals in daily life (Bratanıch et al., 2022). These methods offer people the opportunity to improve overall health throughout their lives. For example, behaviors such as smoking cessation, reducing alcohol consumption, weight control, stress management, regular sleep habits, personal hygiene, exercise and balanced nutrition can help control health risk factors and improve health (Zaybak & Fadıloglu, 2004; Güzel Ertop et al., 2012; Q. Lu et al., 2022). These basic health behaviors usually start within the family and are then supported by social values and education (Yalçınkaya et al., 2007).

In today's world, life's challenges and stressors are inevitable. This is where psychological resilience comes into play. Psychological resilience is the ability to adapt with flexibility and recover positively when faced with stress, trauma, loss or difficulties (Doğan, 2015; Yavuz, 2023). This concept refers to the ability of individuals to show flexibility against the difficulties of life, to maintain emotional balance and to use positive thinking skills. While it can help individuals to protect and improve their mental health, it can also contribute to societies to exhibit resilience in times of crisis (Levine, 2003). Psychological resilience develops with the interaction of various factors (Shrivastava & Desousa, 2016). Positive thinking, social support, problem-solving skills, emotional awareness and personal empowerment are the cornerstones of psychological resilience. Positive thinking is the ability to develop a more optimistic perspective on challenges and a hopeful view of the future. Social support refers to the ability to build trusting relationships and receive emotional and practical support from others. Problem solving skills include the process of identifying problems, finding and implementing solutions, while emotional awareness includes the ability to recognize, accept and manage emotions. Personal empowerment refers to the individual's ability to recognize, develop and use their own strengths (Fletcher & Sarkar, 2013; Shrivastava & Desousa, 2016). Psychological resilience is the ability to adapt to the stress and difficulties of life with flexibility and to recover positively. In this way, the individual can help to cope more effectively with all kinds of difficulties brought by life (Fletcher & Sarkar, 2013; Yavuz, 2023)

Natural disasters leave a mark on our lives as one of the most painful and destructive events in human history. Especially earthquakes, with their sudden and unpredictable nature, deeply affect not only the physical environment but also the mental and emotional health of individuals. People living in an earthquake-prone country like Turkey have had to face this reality and are struggling to cope with the psychological effects of earthquakes. On February 6, 2023, at 04:17 in the morning, the whole world was shaken by a major earthquake disaster in the Kahramanmaraş-Hatay-Gaziantep axis of Turkey. The magnitude of the earthquakes was 7.8 and 7.6 9 hours later, with a total of 1,117 aftershocks, both large and small, affecting 11 provinces, causing great destruction and more than 50,000 casualties and property losses (Disaster and Emergency Management Presidency, 2023). Due to its location on the Alpine-Himalayan Earthquake Zone, Turkey witnessed one of the biggest disasters of the last century (Telli Yamamoto & Altun, 2023). In the aftermath of the earthquake, the country's health indicators changed dramatically. In addition to deaths, permanent or temporary disabilities, mental disorders and injuries, problems emerged in areas such as education and job losses, failure to meet basic needs, housing, transportation and communication. In this process, healthy lifestyle behaviors of students who have received health education and who will be health workers in the future, which have a significant impact on the development of public health in this process, can help students to adapt with flexibility and recover positively when faced with stress, trauma, loss or difficulties brought by natural disasters. In this context, it is important to understand the impact of healthy lifestyle behaviors on the psychological resilience of associate degree students receiving health education after the earthquake. Health education programs provide these students with the necessary knowledge and skills to adopt healthy lifestyle behaviors. However, traumatic events such as natural disasters can undermine the psychological resilience of these students and affect their health behaviors.

The aim of the study is to clarify the relationship between health lifestyle behaviors and psychological resilience of associate degree students who received

health education after the earthquake. This study can contribute to making future health education programs more effective by evaluating the impact of traumatic experiences and health education on students' health behaviors and psychological resilience.

2. MATERIALS AND METHOD

2.1. Research Type

In line with the purpose of the study, a quantitative research design was applied by presenting descriptive findings. This research design refers to studies that simply require obtaining and analyzing numerical data. Descriptive research is limited to describing a situation; that is, the results do not include comparisons to explain a specific situation (Büyüköztürk et al., 2013).

2.2. Universe and sample

The population of the study consists of students from Hatay Mustafa Kemal University Vocational School of Health Services. In all departments, the scale questions were applied to the students voluntarily. In addition, convenience sampling method was used to collect the data of the study. Convenience sampling is a non-random sampling method that the researcher selects from the main mass based on predetermined criteria (Küçük, 2016). During the research conducted between 15.04.2023-15.05.2023, it was determined that 1300 students enrolled in the vocational school were continuing their education and training activities. In our research, where we accepted the population as 1300, it was determined that it was sufficient to reach 297 students when the sampling calculation was made within the 95 percent confidence interval (Yazıcıoğlu & Erdoğan, 2004). Between the given dates, 428 students were reached. It was concluded that this number was sufficient as a sample.

2.3. Data Collection Tools

"Personal Information Form", "Healthy Lifestyle Behavior Scale II" and "Brief Psychological Resilience Scale" were used to collect data in the study.

Personal Information Form; A structure consisting of statements such as age, gender, the program they study, class level and the presence of chronic diseases is intended to determine the characteristics of university students.

Healthy Lifestyle Behavior Scale II (HLSB II); The scale was adapted into Turkish by Bahar et al. (2008). he scale has 52 items and includes 4-point Likert-type options (1-never, 2-sometimes, 3-frequently and 4-regularly). The scale consists of six sub-dimensions: "health responsibility", "physical activity", "nutrition", "spiritual development", "interpersonal relationships" and "stress management". The lowest total score was 52 and the highest total score was 208. The higher the total score, the more healthy lifestyle behaviors the student is considered to have. Reverse coding was not applied in the scale. During the adaptation of the scale, Cronbach Alpha reliability coefficient was observed as 0.780 (Bahar et al., 2008). When the reliability of the scale was analyzed, the Cronbach Alpha reliability coefficient for the overall scale was calculated as 0.938. This reliability value shows that the scale is highly reliable (Kalaycı, 2017; Munro, 2005).

Brief Psychological Resilience Scale; Brief Psychological Resilience Scale (BSRS) adapted into Turkish by Doğan (2015) will be used. KPSÖ is a 5-point Likert-type scale consisting of 6 items and is prepared as "1: Strongly disagree-5: Strongly agree". It is a measurement tool for self-evaluation of the individual. A high mean arithmetic score on the scale indicates a high level of psychological resilience. There is reverse coding in questions 2, 4 and 6 in the scale. The Cronbach's Alpha coefficient of the scale translated into Turkish was reported as 0.780 (Doğan, 2015). When the reliability of the scale was analyzed, the Cronbach Alpha reliability coefficient was calculated as 0.842. This reliability value shows that the scale is quite reliable (Kalaycı, 2017; Munro, 2005).

2.4. Data collection and analysis

After obtaining the necessary permissions from the scale owners and the ethics committee, the scale questions were sent to the participants online and the participants were asked to answer voluntarily. The data obtained were analyzed using the SPSS program. Frequency and percentage calculations were made to determine the demographic and descriptive data of the participants (age, gender, department, grade level, chronic disease status, etc.).

It was determined that the healthy lifestyle behavior and psychological resilience data of the students participating in the study did not deviate from the normal distribution. In this context, Pearson correlation, simple linear regression and multiple linear regression analyses were performed to evaluate the role between psychological resilience and healthy lifestyle behavior and its sub-dimensions.

3. RESULTS

In the findings section, the demographic and descriptive data of the participants are first presented in Table 1.

Table 1. Descriptive data on demographic and descriptive characteristics of the research group

Demographic Characteristics	Groups	Number (n)	Percentage (%)
Gender	Female	348	81.3
	Male	80	18.7
Age	18-19 years old	101	23.6
	20-21 years old	236	55.1
	22 years and older	91	21.3
Program of Study	Anesthesia	66	15.4
	First and Emergency Aid	41	9.6
	Medical Imaging Techniques	54	12.6
	Medical Laboratory Techniques	41	9.6
	Medical Documentation and Secretariat	93	21.7
	Aged Care	75	17.5
	Occupational Therapy	58	13.6
Grade	1st Grade	202	47.2
	2nd Grade	226	52.8
Chronic Illness Status	Yes	24	5.6
	No	404	94.4
TOTAL		**428**	**100.00**

According to Table 1, the majority of the 428 participants (81.3%) were female and more than half (55.1%) were between the ages of 20-21. Although there are not big differences in the distribution of students according to the departments/programs they study, 21.7% of the students study in the department of medical documentation and secretarial department and 17.5% in the department of elderly care. 47.2% of the participants were 1st year students and 52.8% were 2nd year students. The majority of the participants (94.4%) stated that they did not have a chronic disease.

Normality test results are presented in Table 2 for the scale and sub-dimensions used in the study.

Table 2. Normality test analysis data

Scales and Dimensions	Mean	Sd.	Skewness	Kurtosis
PR	2.90	0.77	-0.111	0.303
HLB	2.33	0.40	0.300	0.286
Health Responsibility	2.20	0.51	0.590	0.467
Physical Activity	2.02	0.54	0.432	0.380
Nutrition	2.15	0.39	0.434	0.626
Spiritual Development	2.69	0.55	0.027	-0.329
Interpersonal Relationships	2.62	0.50	0.162	0.045
Stress Management	2.27	0.49	0.597	0.431

PR: Psychological Resilience; HLB: Healthy Lifestyle Behavior

Considering the data obtained from the participants in Table 2, it was concluded that the Skewness and Kurtosis values of the data were distributed between "-1 and +1" and the data did not deviate from the normal distribution. In line with this result, it was decided to apply parametric analyses in the following analyses (Kalaycı, 2017). In addition, in Table 2, the minimum and maximum mean scores of the scales and sub-dimensions vary between 1 and 5 for the psychological resilience scale and between 1 and 4 for the healthy lifestyle behaviors scale and its sub-dimensions. In this context, it was determined that the mean scores of the participants' psychological resilience and healthy lifestyle behavior were below the average value. The sub-dimensions of healthy lifestyle behavior were also found to be at average level and below average. It is thought that the behaviors of young people in psychological resilience, healthy lifestyle behavior and sub-dimensions are caused by the effects of the earthquake.

Table 3 presents the results of Pearson correlation analysis between psychological resilience and healthy lifestyle behavior and its sub-dimensions. According to these results, there is a statistically significant and positive relationship between psychological resilience and healthy lifestyle behavior and its sub-dimensions ($p<0.001$). In other words, an increase in the scales or sub-dimensions will cause an increase inpsychological resilience ($p<0.001$).

Table 3. Pearson correlation analysis findings between scales and sub-dimensions

Scales and Dimensions		1	2	3	4	5	6	7	8
1-Psychological Resılıence	**r**	1	.457**	.328**	.336**	.293**	.437**	.328**	.465**
2-Healthy Lifestyle Behavior	**r**	.457**	1	.819**	.733**	.729**	.855**	.811**	.841**
3-Health Responsibility	**r**	.328**	.819**	1	.524**	.534**	.613**	.601**	.627**
4-Physical Activity	**r**	.336**	.733**	.524**	1	.549**	.477**	.427**	.564**
5-Nutrition	**r**	.293**	.729**	.534**	.549**	1	.518**	.466**	.526**
6-Spiritual Development	**r**	.437**	.855**	.613**	.477**	.518**	1	.724**	.712**
7-Interpersonal Relationships	**r**	.328**	.811**	.601**	.427**	.466**	.724**	1	.618**
8-Stress Management	**r**	.465**	.841**	.627**	.564**	.526**	.712**	.618**	1

**p<0.001, *p<0.05

Table 4. Findings on the effect of healthy lifestyle behavior on psychological resilience

Variable	Unstandardized Coefficients		Standardized Coefficients	t	p	F	Model (p)
	B	Std. Error	β				
Constant	0.835	0.198		4.22	p<0.001	112.4	p<0.001
Healthy Lifestyle Behavior	0.885	0.083	0.457	10.6	p<0.001		
R^2: 0.209, R: 0.457, Regression Equation of the Model: Y=0.835+ (0.457X)							

In Table 4, simple linear regression analysis was performed to evaluate the effect of healthy lifestyle behaviors on psychological resilience, which is the main objective of the study. According to the results of the analysis, when the F statistic (F: 112.41; p<0.001) indicating that the model is significant and the t statistic (t: 10.60; p<0.001) indicating the significance of the regression coefficients are examined, it is observed that the results obtained are statistically significant. With the statistically significant (R: 0.457; p<0.001) and positive relationship between the variables, the R^2 value was obtained as 0.209. According to this finding, 20.9% of the variability in psychological resilience is explained by changes in healthy lifestyle behaviors. According to the results of simple linear regression analysis, it was determined that healthy lifestyle behavior had a positive and significant effect on psychological resilience (β:0.457; p<0.001).

Table 5. The effect of healthy lifestyle behavior sub-dimensions on psychological resilience

Variable	Unstandardized Coefficients		Standardized Coefficients	t	p	F	VIF	Model (p)
	B	Std. Error	β					
Constant	0.972	0.20		4.664	p<0.001			
a) Health Responsibility	-0.019	0.09	-0.013	-0.206	0.837		2.094	
b) Physical Activity	0.129	0.08	0.090	1.616	0.107		1.737	
c) Nutrition	0.004	0.10	0.002	0.037	0.971	22.79	1.726	p<0.001
d) Spiritual Development	0.331	0.10	0.234	3.272	0.001**		2.865	
e) Interpersonal Relationships	-0.075	0.09	-0.049	-0.759	0.448		2.337	
f) Stress Management	0.445	0.10	0.284	4.203	p<0.001		2.547	

Durbin-Watson: 2.029, R^2: 0.245, R: 0.495, *p<0.001, **p<0.05

Regression Equation of the Model: Y=0.835 + (0.331d+0.445f)

In Table 5, multiple linear regression analysis was applied to assess the effect of different aspects of healthy lifestyle behaviors on psychological resilience. Durbin-Watson coefficient between 1.5 and 2.5 and Variance Inflation Factor (VIF) coefficients less than 10 indicate that there are no autocorrelation and multicollinearity problems (Büyüköztürk et al., 2013; Kalaycı, 2017). It was found that there was a statistically significant effect between the sub-dimensions of healthy lifestyle behaviors and psychological resilience (F: 22.79; p<0.001). Looking at the regression coefficients, there is no significant effect for health responsibility (t: -0.206; p: 0.837), physical activity (t: 1.616; p:0.107), nutrition (t: 0.037; p:0.971) and personal relationships (t:-0.759; p: 0.448). However, a significant effect was found for spiritual development (t: 3.272; p: 0.001) and stress management (t: 4.203; p<0.001). There was a positive and statistically significant effect between the variables (R: 0.495; p<0.001). The R^2 value of the ratio of the independent variables explaining the dependent variable of spiritual development and stress management sub-dimensions was calculated as 0.245. This finding shows that 24.5% of the changes in participants' psychological resilience were explained by the spiritual development and stress management sub-dimensions of healthy lifestyle behaviors.

4. DISCUSSION

It was determined that the mean score of psychological resilience (2.90±0.77) and the mean score of healthy lifestyle behavior (2.33±0.40) of the young people participating in the study were closer to the value below the average value. The sub-dimensions of healthy lifestyle behavior were also found to have average and below average values. Yener Özcan and Ceylan (2023), Lu et al. (2022), Polat (2023) and Demirbilek and Gökkaya (2022) found that the mean scores of psychological resilience on students were above the average level. Beyazgül and Özer (2024), Demireal Bozkurt and Yağız Altınbaş (2021), Köse Tosunöz (2021), Gömleksiz et al. (2020) and Akgün et al. (2021) found that the mean scores of healthy lifestyle on students were at or above the average level. In the research conducted by on 2200 people andVilovic et al. (2022) on 483 people, it was concluded that Covid-19 pandemic negatively affects health lifestyle and psychological health. Considering other studies in the literature, it is thought that large-scale social events negatively affect students' psychological resilience and healthy lifestyle behaviors.

In the study, a statistically significant and positive relationship was found between psychological resilience and healthy lifestyle behavior and its sub-dimensions (p<0.001). In other words, an increase in the scales or sub-dimensions will lead to an increase in other dimensions. As a result of the research conducted by Nishimi et al. (2022) on 3767 people, psychological resilience predicts that it will eliminate the negative effects on having a healthy lifestyle in young adulthood. In the study conducted by Duan et al. (2024) on 9448 people, a positive relationship between psychological resilience and healthy lifestyle behavior was observed. In the study conducted by Mizmizlioğlu (2018) on 156 health workers, a positive relationship between healthy lifestyle behavior and psychological resilience was determined. In the study conducted by Eren (2023) on 283 people, it was stated that there was a positive relationship between psychological

resilience and quality of life. Similarly, it was concluded in the literature that a change in healthy lifestyle behavior or psychological resilience levels positively increases other levels.

In the study, it was determined that healthy lifestyle behavior had a positive and significant effect on psychological resilience (β:0.457; p<0.001). In addition, the effect of the sub-dimensions of healthy lifestyle behavior on psychological resilience was examined. According to the results, there was no significant effect for health responsibility, physical activity, nutrition and personal relationships (p>0.05). However, it was found to have a positive and statistically significant effect for spiritual development and stress management (p<0.05). In the study conducted by Liu et al. (2024) on 743 people, it was stated that health-related behaviors had a positive effect on mental health and psychological resilience. In a study conducted by Vilovic et al. (2022) on 483 people during the Covid-19 period, it was concluded that health lifestyle positively supports psychological health. In a study conducted by Cai et al. (2023) on 9250 people in China, it was stated that healthy lifestyles have a positive effect on psychological resilience and longevity. In the study conducted by Köseoğlu Örnek and Kürklü (2017) on 480 students, it is seen that individuals with healthy lifestyle behaviors have reduced psychological health problems such as anxiety and depression. In a study conducted by Demir Uslu et al. (2021) on 303 people, it was stated that healthy lifestyle behavior had a positive effect on happiness. The results of similar studies in the literature show that healthy lifestyle or quality of life has positive effects on people's psychology.

5. CONCLUSIONS AND RECOMMENDATIONS

In the study, it was aimed to examine the effect of healthy lifestyle behaviors on psychological resilience after the earthquake of young individuals, who are assumed to be more conscious than the other segments by receiving health education and who will be the health professionals of the future, which significantly affects the level of development of public health. It was determined that the mean psychological resilience score of the participants was below the average value and the mean score of healthy lifestyle behavior was closer to the minimum value. The sub-dimensions of healthy lifestyle behavior were also found to have average and below average values. It is thought that the psychological resilience, healthy lifestyle behavior and behaviors in sub-dimensions of the young people participating in the research are caused by the effects of the earthquake. The results of this research are important because it draws attention to the fact that their physical, mental and social negative effects may emerge in the future.

In the study, it was determined that there was a statistically significant and positive relationship between healthy lifestyle behavior and its sub-dimensions and psychological resilience in the post-earthquake study of associate degree students receiving health education. This result shows that having a healthy lifestyle can increase the level of psychological resilience and vice versa. In this context, encouraging individuals' healthy lifestyle behaviors can be an effective strategy to increase their psychological resilience.

According to the results of the analysis conducted in line with the main purpose of the study, it was determined that healthy lifestyle behavior had a positive and significant effect on psychological resilience (β:0.457; p<0.001). In addition, the effect of the sub-dimensions of healthy lifestyle behavior on psychological resilience was examined. According to the results, it was determined that spiritual development and stress management sub-dimensions had a significant and positive effect between healthy lifestyle behavior and psychological resilience. No significant effect was found for other sub-dimensions. It reveals that there are differences between the sub-dimensions of healthy lifestyle behavior and that these sub-dimensions have different effects on psychological resilience. Especially spiritual development and stress management sub-dimensions seem to have a significant effect on psychological resilience. Therefore, it is important to develop strategies to increase psychological resilience by focusing on these areas.

The following recommendations can be made in line with the results of the research:

- Health policies and programs should encourage and support healthy lifestyle behaviors of individuals. In particular, programs focusing on areas such as physical activity, nutrition and stress management may be effective.
- Activities and programs that support spiritual development can play an important role in enhancing psychological resilience. Such programs can help individuals meet their spiritual needs and achieve emotional balance.
- It is important to teach young people methods of coping with stress. It can offer stress-reducing techniques such as yoga, meditation, breathing exercises, as well as support groups or counseling services.
- Education and awareness-raising activities should emphasize the importance of healthy lifestyle behaviors and support individuals to adopt these behaviors.

- Healthcare providers should offer counseling and support services to enhance individuals' psychological resilience. These services can focus specifically on stress management and emotional well-being.

Traumatic events such as earthquakes can have serious psychological effects on individuals. However, adopting healthy lifestyle behaviors can help individuals cope better with such stressful situations. It also plays an important role in the development of health policies and intervention strategies. To support post-earthquake communities and increase psychological resilience, health education and information programs are becoming more important. These programs will help individuals adopt healthy lifestyle behaviors and strengthen their psychological resilience. In conclusion, it is clear that post-earthquake healthy lifestyle behaviors have positive effects on psychological resilience. These findings should be taken into account in the planning and implementation of health services and social interventions. Future studies may contribute to a deeper understanding of this relationship and the development of more effective interventions.

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No

Conflict of Interest:

The authors declare that they have no conflicts of interest

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Analysis of Periodic Self-Assessments within the Scope of Health Quality Standards in terms of Material Management as a Preventive Activity: A Retrospective Study in a University Hospital

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ABSTRACT

This study aims to investigate the effects of periodic self-assessments on materials management within the framework of quality management in healthcare. The retrospective study, conducted in a university hospital, evaluates the effectiveness of quality improvement initiatives and compliance with health standards, while examining in detail the effects of these processes on materials management. It also investigates how self-assessment processes improve healthcare service delivery and contribute to materials management processes. Problems identified through Fishbone and Pareto analysis are examined, prioritised and solutions are developed. The findings obtained aim to improve material management processes and increase quality standards in health. The main purpose of the research is to examine the effects of periodic self-assessments on materials management in order to improve the quality of healthcare services. The findings emphasise the importance of maintaining quality standards in health services and systematic handling of periodic self-assessments. Problems identified by Fishbone and Pareto analysis are analysed by root cause analysis and solutions are developed. This approach aims to contribute to the development of materials management processes and to the improvement of quality standards in healthcare. The results of the research are an important guide for practitioners, managers and policy makers in the fields of quality management and materials management in health services.

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1.INTRODUCTION

Quality management in healthcare services is a comprehensive approach that aims to increase patient satisfaction and ensure the effectiveness and efficiency of healthcare services. This scope includes various elements such as meeting patients' expectations from health services, improving health outcomes, increasing the accessibility of health services and ensuring the continuity of health services. Quality management requires continuous monitoring and improvement of the quality of services provided by hospitals and healthcare organizations in order to increase patients' satisfaction with healthcare services. (Fatima et al., 2018). Patients' satisfaction is considered a reflection of the quality of healthcare services and this satisfaction influences patients to follow health advice and achieve the best health outcomes (Chakravarty, 2011).

Quality management in healthcare also includes the effectiveness of healthcare services. This includes the effective management of patients' treatment processes, reducing medical errors and improving patients' health outcomes. Quality management in healthcare aims to enable healthcare providers to take the initiative to promote quality and deliver better healthcare services (Sharma & Tripathi, 2022). In addition, quality management in healthcare includes improving the accessibility of healthcare services and ensuring the continuity of healthcare services. This is important to ensure that patients have easy access to health services, to ensure the sustainability of health services and to improve the overall health status of the community (Ansu-Mensah et al., 2019). Quality management in healthcare also includes the cost-effectiveness of healthcare services. Cost-effectiveness ensures optimization of the way health services are delivered, efficient use of resources and sustainability of health services. (Kılıçarslan, 2018). This in turn supports the reach of health services to the masses and the improvement of the overall health status of the population.

Türkiye has made significant progress in improving its health system and services over the years. The Health Transformation Program (HTP) in Türkiye has been instrumental in improving the accessibility and quality of healthcare services for the population (Alawa et al., 2019). The implementation of the HTP has resulted in a reduction in out-of-pocket expenditures for health services, an increase in human resources, an increase in patient satisfaction, and an expansion of health insurance coverage, especially for low-income groups. Turkey's health sector has undergone significant transformations and improvements through various initiatives and reforms, leading to improved access, quality and outcomes of health services for both its population and refugee communities. The country's focus on leveraging technology, developing health information systems and investing in healthcare infrastructure has played a crucial role in driving these positive changes.

Health services are as old as human history and are a fundamental condition for people to live a healthy and happy life. Healthcare institutions are institutions that should provide quality service with safe and functional physical conditions for all stakeholders receiving services. Accredited hospitals are preferred by patients because they provide services in accordance with predetermined standards. Quality standards in healthcare include various aspects such as patient safety, effectiveness of care, patient-centeredness, timeliness, efficiency and equity (Spooner & Classen, 2009). The International Organization for Standardization (ISO) defines standards as a formula that defines the best way to perform a task, ensures a certain level of quality or behavior, and serves as a unit of measurement (Kelly et al., 2022).

In the context of healthcare, quality standards play a crucial role in ensuring that healthcare services meet defined criteria for safety, effectiveness and patient satisfaction. These standards are designed to provide a basis for comparing health outcomes, resource utilization and healthcare costs, as well as to establish uniform definitions for healthcare professionals and organizations (Barfield et al., 2012). Quality standards aim to improve the overall quality of healthcare and enhance patient outcomes by emphasizing variation in practice and ensuring the implementation of safe and acceptable care (Kelly et al., 2022).

The implementation of quality standards in healthcare organizations has been shown to have a positive impact on the motivation and performance of healthcare professionals (Tamer, 2021). Healthcare organizations can increase the efficiency and effectiveness of their services by adhering to established quality standards, which can lead to improved patient care and outcomes. In Turkey, the development of quality standards in healthcare plays a critical role in improving the service quality of public hospitals (Avcil & Uslu, 2022). This shows that setting and implementing standards in healthcare services is vital for the safety and satisfaction of patients. For hospitals in Turkey, the Health Quality Standards (HQS), particularly Version 6, provide a comprehensive framework designed to enable hospitals to deliver high-quality, efficient and patient-centered care. These standards include a list of health quality indicators that hospitals should monitor to maintain and improve their services. The key focus areas of these indicators include patient safety, clinical effectiveness, patient-centeredness, timeliness, efficiency and equity. Periodic self-assessment is an integral part of quality management in health. This process enables healthcare organisations to continuously improve service delivery, increase patient safety and improve the quality of healthcare services. Determination and implementation of quality standards in health should be supported by increasing the level of

education and knowledge of healthcare professionals (Yıldız, 2018 ; Çiftcibaşı, et.al., 2022 ; Çerçi & Baykal, 2022).

The aim of the study is to examine the effects of periodic self-assessments to improve the quality of healthcare services in terms of materials management. In this context, the retrospective study conducted in a university hospital evaluates the effectiveness of quality improvement initiatives and the level of compliance with health standards. The main objective of the study is to reveal how self-assessment processes improve healthcare service delivery and the effects of these processes on materials management. It also examines how these processes contribute to reducing errors, increasing efficiency and improving patient outcomes. Thus, the importance of adhering to quality standards and conducting periodic self-assessments in healthcare delivery will be emphasized and the benefits of addressing these processes in a systematic and methodological manner will be demonstrated. In this context, the problems identified were first examined and prioritized in detail using Fishbone and Pareto analysis. These analyses helped to identify which problems are the most important and require urgent solutions. Then, root cause analysis was applied to the identified error types and the root causes underlying these problems were revealed. In the light of the data obtained, effective and feasible solutions were developed for each problem. This systematic approach aims to contribute to improving material management processes and raising quality standards in healthcare.

1.1. Quality Standards in Health And Periodic Self-Assessments

Health quality standards are an important issue that aims to improve the efficiency, safety and quality of care provided in health services. Developed and implemented by the Ministry of Health, HQS play a critical role in ensuring patient safety, improving service quality and increasing patient satisfaction in healthcare organizations (Esen & Çalişkan , 2021 ; Yaprak, 2016). These standards are used in various fields such as determining the quality perception of employees in hospitals and other healthcare organizations, protecting patient privacy, evaluating the quality of medication management. (Koç & Güven, 2023 ; Kutsal et al., 2022).

Health quality standards are recognized as an important tool to support improvements in healthcare. For example, these standards are used in a wide range of areas, from evaluating hospital websites to analyzing patient experiences (Karaca & Usta, 2020; Çakıt, 2023). In addition, these standards aim to improve the organizational structure and communication of healthcare organizations, ensure employee safety and increase patient satisfaction. (Karaca & Usta, 2020 ; Şantaş et al., 2021).

Health quality standards also play an important role in determining and implementing health policies at the national level. For example, it is stated that these standards are effective in improving the service quality of public hospitals in Turkey. (Avcil & Uslu, 2022). Furthermore, these standards form the basis of programs developed to improve the quality of health care at the national level (Maphumulo & Bhengu, 2019; Yaprak, 2016).

Periodic self-assessments of quality in health are an important tool for continuous evaluation and improvement of the care provided in health services (Kutsal, et.al., 2022). These assessments are carried out at regular intervals to determine the service quality of healthcare organizations, identify deficiencies and ensure compliance with quality standards. Quality in health periodic self-assessments aim to ensure that organizations continuously review themselves and ensure their development (Al-Hanawi, 2018; Alkhenizan & Shaw, 2011). These self-assessments are usually conducted in accordance with quality standards set by the Ministry of Health and assess the extent to which organizations comply with these standards (Stefanoski & Stefanoska, 2022). For example, self-assessments focusing on specific areas, such as assessments of palliative care clinics, can help to develop strategies to improve the quality of these services. They can also help to identify and control risks that may affect the health and safety of staff and patients (Panagioti, et al., 2014 ; Paudyal et al., 2015; Mitchell et al., 2019).

“Periodic self-assessments of quality in health are an important step to improve the quality of health services at hospital and clinic level. These assessments can include elements such as accurate diagnosis and treatment to meet patients' expectations, a clean hospital environment and friendly healthcare professionals. In addition, these assessments can focus on quality improvement at hospital and clinic level, leading to more efficient and reliable healthcare services. (Jaya, et al., 2024 ; Wu et al., 2021). Periodic self-assessments of quality in health are an important tool for increasing the competencies of health professionals, ensuring patient satisfaction and improving the overall quality of health services. These assessments are conducted with the aim of identifying training needs of health personnel, addressing gaps in service delivery and promoting continuous improvement. In addition, these self- assessments can also assess factors such as work stress, fatigue and job satisfaction of healthcare staff. (Bowdoin et al., 2016 ; Koornneef et al., 2018 ; Estrella & Frazier, 2023). Periodic self-assessments are a comprehensive review conducted at regular intervals to assess how well an organization or a process meets established objectives and standards. These assessments help organizations monitor their performance, make improvements and maintain compliance with quality standards. The

importance of periodic self-assessments is that they encourage continuous improvement and enable organizations to achieve their goals. These assessments help organizations identify their strengths, identify weaknesses and determine future strategies (Tricco, et al., 2018)

1.2. Materials Management And Importance In Healthcare

The process of materials management in healthcare covers the process of effectively planning, procuring, storing, distributing and using the materials and inventories of healthcare organizations. This process is important to improve the quality of healthcare services, reduce costs, ensure environmental sustainability and guarantee patient safety. Materials management is the most mature macro process in hospitals and an important issue in health systems as it affects clinical and financial outcomes (Iannone et al., 2013). This includes effective management of the material supply chain, accurate tracking of inventory and appropriate use of materials.

The materials management process in healthcare includes steps such as determining the material needs of hospitals, managing relationships with suppliers, optimizing inventory levels and regulating material flow (Alemsan et al., 2021). This process requires combining demand forecasting methods with inventory management and promotes systemic improvements in healthcare organizations. In addition, both human and material resources need to be managed effectively in the materials management process. Research shows that ineffective management of material and human resources can negatively affect the quality of health services (Torrent-Ramos, et al., 2021).

Materials management also includes inventory management. Effective inventory management in healthcare organizations ensures that medicines and other medical supplies are constantly available. This both improves the quality of patient care and reduces costs. Furthermore, optimizing inventory management practices can improve the accessibility and affordability of healthcare services (Durmuş, 2023).

1.3. Literature Research

Periodic self-assessments within the scope of healthcare quality standards are very important preventive measures that can significantly affect the overall quality of healthcare delivery. By conducting retrospective studies, as proposed in a university hospital, insights can be gained into the effectiveness of quality improvement initiatives and adherence to established standards. The literature review on this topic covers a large number of references that shed light on various aspects related to healthcare quality standards, materials management and preventive measures.

Periodic self-assessments within the scope of health quality standards are very important preventive measures that can significantly impact the delivery of health services. As emphasized by Maphumulo and Bhengu, improving quality in healthcare leads to reduced errors, increased efficiency and ultimately better patient outcomes (Maphumulo & Bhengu, 2019). As emphasized by Chen et al., the provision of high-quality data is essential for the accurate evaluation of the effectiveness of public health interventions (Chen et al., 2014). Total Quality Management plays a vital role in achieving competitive advantage in healthcare settings, as discussed by Powell (Powell, 1995).

Assessing the quality of health information systems is strategically advantageous for improving the quality of patient care, as studied by Noël et al. (Noël, Pereira-Vale, & Márquez, 2022). The establishment of quality standards, such as those outlined by Baldwin et al. for the management of pulmonary nodules, sets benchmarks for excellence in healthcare practice (Baldwin, et al., 2018). As suggested by Triantafillou, integrating electronic health records to support quality management can streamline processes and improve care delivery (Triantafillou, 2017). As argued by Nylenna et al., the inclusion of patient perspectives is essential for the comprehensive assessment of healthcare quality (Nylenna et al., 2015). As suggested by Mogakwe et al., creating positive work environments promotes compliance with quality standards and improves patient outcomes (Mogakwe et al., 2019). As discussed by Lega et al. management practices play an important role in improving health system performance and sustainability (Lega et al., 2013).

As emphasized by Condliffe et al., the implementation of quality measures plays a key role in improving healthcare structure, processes and outcomes (Condliffe, et al., 2020). Understanding the factors that influence the implementation of quality standards is essential for successful quality assurance in healthcare facilities, as explored by Matahela et al. (Matahela et al., 2023). As suggested by Spangler, adapting assessment approaches to local realities can lead to more effective service delivery (Spangler, 2012).

An important point emphasized in the references is the importance of separately assessing the methodological quality of studies and instruments in systematic reviews (Terwee, et al., 2011). This distinction is crucial to ensure that the assessment of healthcare quality standards is comprehensive and accurate. Understanding the challenges of quality improvement in healthcare, particularly in post- apartheid South Africa, highlights the need to reduce errors, increase efficiency and improve the overall quality of care delivery (Maphumulo & Bhengu, 2019). This underscores the multifaceted nature of quality improvement efforts in health systems. Infrastructure plays a vital role in determining the quality of care

observed in health services, as demonstrated by a cross-sectional study conducted in several countries (Leslie et al., 2017). The availability of necessary equipment, supplies and well-trained staff directly affects the quality of healthcare services provided. Similarly, service readiness for inpatient care of small and sick newborns is crucial and requires comprehensive assessments of the readiness and capacity of the health facility (Moxon, et al., 2018). These assessments are essential components of providing high-quality care for vulnerable populations. In conclusion, the synthesis of the literature review on periodic self-assessments under health quality standards as a preventive measure from a materials management perspective reveals the complex interplay between methodological quality assessments, infrastructure preparation, cost-effectiveness analyses, infection control programs, and patient-reported outcome measures in ensuring high-quality healthcare delivery. By bringing these different perspectives and approaches together, health systems can proactively address challenges, improve quality of care and ultimately improve patient outcomes.

2. MATERIALS AND METHOD

The study aims to retrospectively analyze the effects of periodic self-assessments on materials management in a university hospital. In this context, the results of self-assessments conducted in accordance with the health quality standards determined in the hospital were collected. The data included the results of the evaluations conducted over a certain period of time and data related to materials management. The collected data were evaluated using quantitative and qualitative analysis techniques. Quantitative analyses included analysis of the results of periodic self- assessments, while qualitative analyses provided a more in-depth examination of changes in materials management processes. In particular, the relationship between self-assessment results and materials management data was analyzed to reveal how these two factors influence each other. The results of self-assessments conducted in different periods were compared and changes over time were analyzed. By interpreting the research findings, the preventive effects of periodic self-assessments on materials management were identified and the contributions of these processes to healthcare service delivery were detailed. As a result, the improvements in materials management brought about by self-assessments and their potential to improve the quality of healthcare services were demonstrated.

Retrospective analysis refers to a methodological approach in research and health care that involves looking at past data or events to analyze outcomes, patterns or trends (Pérez-Fernández, et al., 2020). This type of analysis is widely used in various fields such as medicine, psychology and biology to assess the impact of specific interventions, treatment strategies or research initiatives (Hanney, et al., 2013). By examining historical data, researchers can gain valuable insights into the effectiveness of past practices, inform future decision-making and contribute to the advancement of knowledge in their field (Ahmed, et al., 2019). In summary, retrospective analysis serves as a valuable tool in research and healthcare settings, allowing researchers to gain insights from historical data, evaluate treatment strategies and inform future practice. By looking at retrospective information, researchers can uncover patterns, trends and relationships that contribute to advancing knowledge and improving patient outcomes. Pareto analysis, a technique derived from the Pareto Principle, also known as the 80/20 rule, is a method used to prioritize and evaluate the distribution pattern of elements according to their importance or impact (Fageha & Aibinu, 2014). This analytical approach is widely used in various fields to identify the critical few factors that contribute significantly to a particular outcome or result and to separate them from the many less important factors (Mapes, 2015) By applying Pareto analysis to elements of the project scope, stakeholders can streamline decision-making processes, allocate resources efficiently, and improve project performance by addressing the most critical components first. This approach is in line with the fundamental principle of Pareto optimization, which emphasizes maximizing results by focusing on the most influential factors (Fageha & Aibinu, 2014).

Root cause analysis is a systematic method used to identify the underlying causes or origins of a problem or non-compliance, aiming to address problems at their core rather than merely treating symptoms (Wahed, et al., 2010). In contexts as diverse as healthcare, manufacturing and project management, root cause analysis serves as a valuable tool to investigate events, errors or deviations to understand the factors and systemic issues that lead to unintended consequences (Zohourian, et al., 2017). Through techniques such as fishbone diagram, 5 Whys method or correlation processing algorithms Root cause analysis helps identify the real causes of problems, enabling organizations to implement targeted solutions and improve processes (Gokozan & Michael, 2020). Furthermore, root cause analysis is effective in improving quality control, productivity and operational efficiency by identifying and addressing the root causes of quality-related problems in production processes. By focusing on root cause identification, organizations can prevent problems from recurring, optimize the quality of outputs and minimize losses due to unstable processes (Mahto & Kumar, 2008).

2.1. Purpose and Type of Research

The aim of this study is to examine the effects of periodic self-assessments conducted within the scope of quality standards in healthcare as a preventive activity in terms of materials management.

Specifically, it is to investigate the potential of these assessments in a university hospital to improve materials management by identifying problems in materials management processes and identifying the root causes of these problems. The research aims to assess the impact of critical factors such as lack of management support, lack of strategy, communication problems, and use of poor quality materials, inappropriate storage conditions and lack of training on materials management. This study is a type of retrospective research. Retrospective studies aim to analyze the current situation and make inferences for future improvement activities by examining events that took place in a certain period in the past. In this context, by analyzing the periodic self-assessments previously conducted at the university hospital and the data resulting from these assessments, the root causes of the problems encountered in material management processes were identified and strategic recommendations were developed to solve these problems.

2.2. Population and Sample of the Study

The population of this research is the university hospitals in Türkiye. In particular, university hospitals that regularly evaluate material management processes within the scope of quality standards in health and aim to use these evaluations in line with preventive activities constitute the main population of the study. The sample of the study is the periodic self-assessments conducted in a specific university hospital and the results of these assessments. In the selection of the sample, a university hospital that adopts quality standards in health and aims to improve its material management processes was preferred in accordance with the objectives of the study. The relevant stakeholders such as the personnel working in the materials management department of this hospital, material suppliers, warehouse managers and senior management members were also included in the scope of the study. In this way, a detailed analysis of the problems experienced in the material management processes of the university hospital within the scope of the study and the root causes of these problems was carried out.

Due to the retrospective nature of the study, the data obtained from the periodic self- assessments conducted in the past were analyzed. Accordingly, all self-assessments conducted over a certain period of time (2018-2023) and the data collected during this process constituted the sample size. This data was used to identify critical issues in materials management and the root causes of these issues.

Table 1: Corrective and preventive activity (CPA) monitoring

CN	Audit Type	Department	Date	Definition of Nonconformit
10	Internal Audit	Pediatric Emergency clinic	18.04.2018	Material Management Process
58	Internal Audit	Coronary Angio Unit	20.04.2018	Material Management Process
147	Internal Audit	Operating room	24.04.2018	Material Management Process
191	Internal Audit	Medical Genetics Polyclinic	2.05.2018	Material Management Process
242	Internal Audit	Radiology Angiography Unit	20.04.2018	Material Management Process
243	Internal Audit	Radiology Angiography Unit	20.04.2018	Material Management Process
296	Internal Audit	Gynecology clinic	30.04.2018	Material Management Process
315	Internal Audit	Endoscopy Unit	19.04.2018	Material Management Process

CN: CAP Number

Table 1 lists the non-conformities related to material management identified in various units of the hospital as a result of internal audits conducted on a specific date.

2.3. Limitations of the Study

This research has several limitations and these limitations may affect the generalizability and applicability of the results. First, the study only covers periodic self-assessments conducted in a specific university hospital and other university hospitals or health institutions were excluded. This limits the generalizability of the research findings to all university hospitals. Secondly, the data used in the study were retrospective and obtained from self-assessments conducted in the past. The accuracy and completeness of these data depend on the consistency of past records, and missing or inaccurate data may negatively affect the results of the study. Third, the time span of the research is limited to a specific period, so long-term trends and changes may be ignored. Furthermore, changes in healthcare quality standards and material management processes may vary over time. Fourth, the participants in the study consisted of staff and relevant stakeholders working in the materials management department of a specific university hospital; their views and experiences may not reflect the views and experiences of all employees in the general healthcare sector. Finally, the research is a retrospective study and is based on the analysis of

available data. This methodological approach may be limited in fully revealing cause and effect relationships. Moreover, the subjectivity of the self-assessment data and the differences in the methods used in the assessment process may also affect the consistency of the results. Being aware of these limitations, caution should be exercised in interpreting the results of the study and caution should be exercised in generalizing the findings. It is recommended that these limitations should be eliminated and more comprehensive studies should be conducted for future studies.

2.4. Data Collection and Analysis

The data collection process was carried out using the hospital's quality management system records. In the study, Corrective Preventive Action (CPA) data between 2018 and 2023 were analyzed retrospectively. During this period, all the CPA records made in the hospital were classified into two main categories: the number of general CPA and the number of CPA related to material management. Data were obtained from the hospital's quality control unit and materials management department. During this period, CPA records were collected and the total number of CPA and the number of material management related CPA were determined for each year. The collected data was analyzed in detail to assess the impact of the hospital's quality improvement efforts and changes in materials management processes. In this way, it was aimed to better understand the effects of periodic self-assessments on materials management and to develop recommendations for improving quality standards in healthcare services.

Table 2: Number of CPA

Year	2018	2019	2020	2021	2022	2023
Number of CPA	494	59	16	45	439	458
Material Management Related Corrective Preventive Action (CPA)	56	12	3	18	150	80

The data on the number of Corrective Preventive Actions (CPA) and the number of material management related CPA between 2018 and 2023 reflect the fluctuations and focus of the hospital's quality improvement process. While the overall number of CPA was as high as 494 in 2018, there was a significant decrease in 2019 and 2020; in particular, the number of CPA in 2020 was only 16. This decline may be related to the effects of the global COVID-19 pandemic. In 2021, the number of CPA increased again, reaching 45, before rising to 439 in 2022 and 458 in 2023.

A similar fluctuation was observed in the number of CPA related to material management. The number of 56 in 2018 decreased to 12 in 2019 and 3 in 2020. Rising to 18 in 2021, the number increased significantly to 150 in 2022 and reached 80 in 2023.

2.5. Application

It was examined within the scope of the Quality Standards in Health (QSH) published by the Ministry of Health to determine quality standards in health services and to ensure improvement. According to Version 6 of QSH, internal quality audits in healthcare organizations stand out as an important tool to improve service quality and ensure its continuity. Generally, internal quality audits are conducted at least once a year. However, the frequency of audits may vary depending on the size, type and service area of health organizations. Large and complex healthcare organizations are usually audited more frequently, while the frequency of audits may be lower for small-scale organizations or organizations providing private sector services.

First of all, hospital management and relevant departments were contacted to obtain information about the periodic self-assessment processes carried out within the scope of the QHS. Then, the audit criteria and criteria affecting material management processes were identified.

In this study, it is aimed to analyze periodic self-assessments conducted within the scope of Health Quality Standards in terms of materials management as a preventive action. Accordingly, CPA related to materials management were analyzed using the Fishbone Diagram (Ishikawa Diagram) within the scope of a retrospective study conducted in a university hospital. The diagram was used to identify the root causes of materials management problems and to categorize and analyze these causes.

The Fishbone manpower, materials, methods, machines, measurement, and environment (Radziwill, (2017). Under the manpower, reasons such as lack of training, inexperience and lack of motivation were included. Lack of training resulted in staff not fully understanding the material management processes and making mistakes in these processes. Inexperience led to difficulties in learning the correct materials management practices, especially for new employees. Lack of motivation led to staff not doing their jobs diligently enough and making mistakes in the processes.

Figure 1: Material Management Related to CPA

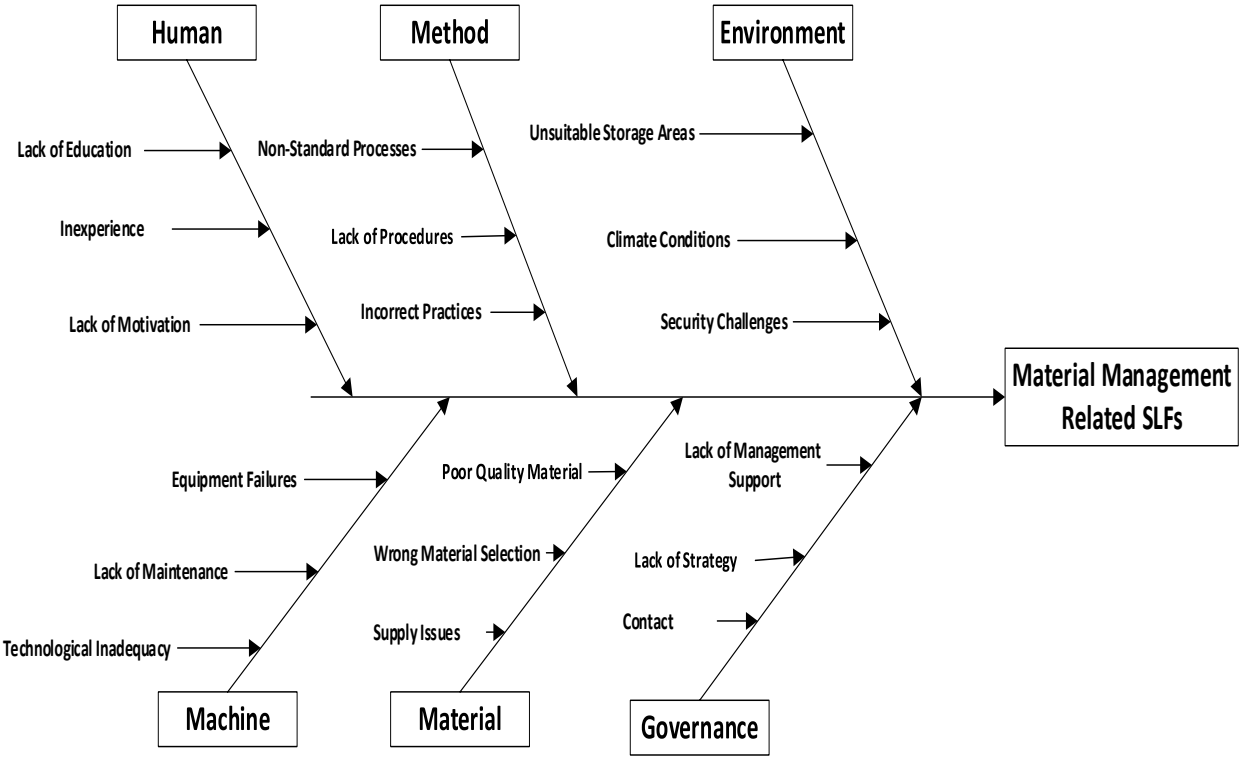
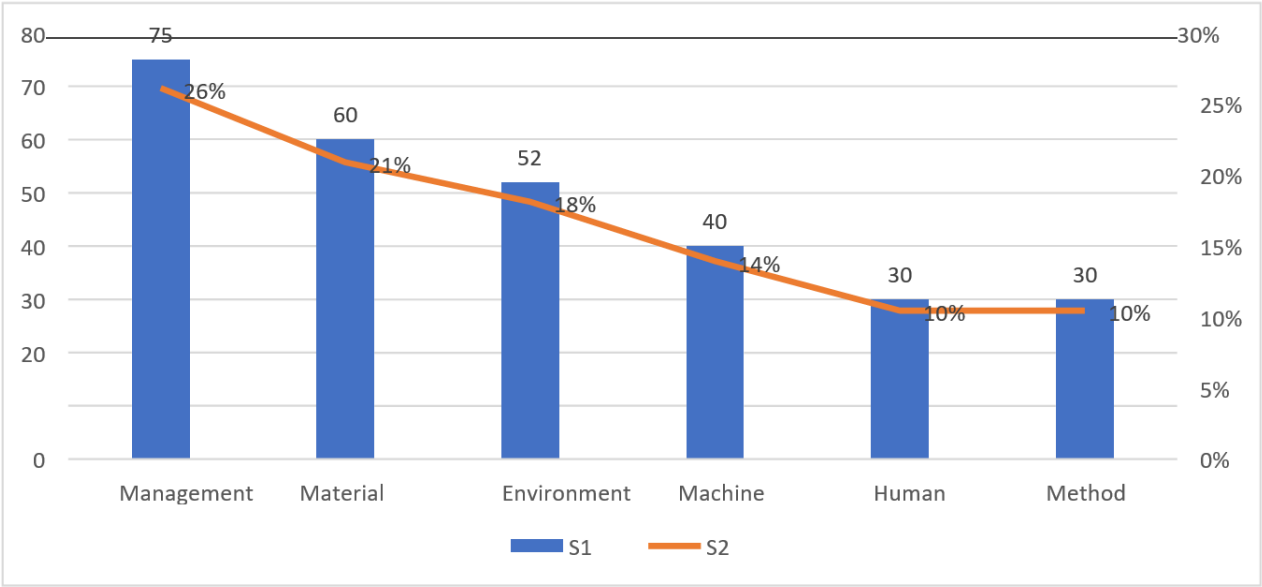


Figure 2: Pareto Analysis



In the method category, reasons such as non-standard processes, lack of procedures and incorrect practices were identified. Non-standard processes caused material management processes to be inconsistent and disorganized. Lack of procedures meant that the steps required to solve a particular problem were not clear, while incorrect practices were the incorrect application of existing procedures. For example, due to a lack of procedures, staff may not know how to correctly manage material requests, which can lead to delays in the process and incorrect material utilisation.

Under the material category, reasons such as poor quality materials, wrong material selection and supply problems were included. The use of poor quality materials reduced the quality of products or services, the wrong choice of materials meant the use of materials that were not suitable for a particular job, and supply problems were identified as the inability to obtain materials on time and on favorable terms. For example, the selection of inappropriate cleaning materials may lead to the preference of products that are not suitable for use in services and therefore hygiene problems may arise.

In the machinery category, reasons such as equipment breakdowns, lack of maintenance and technological inadequacy were analyzed. Equipment breakdowns caused material management processes to be disrupted, lack of maintenance meant that equipment was not regularly checked and problems could not be identified in advance, and technological inadequacy was assessed as the inability of existing equipment or systems to meet current needs. The lack of regular maintenance of medical devices can lead to unexpected failures during surgery and disruption of critical procedures.

Under the environmental factor, reasons such as unsuitable storage conditions, climatic conditions and security issues were included. Unsuitable storage conditions led to deterioration or damage to materials, climatic conditions, especially temperature and humidity, affected the quality of materials, and security issues increased the risk of theft or damage to materials.

Finally, under the management category, reasons such as lack of management support, lack of strategy and communication problems were identified. Lack of management support meant that materials management processes were not sufficiently supported, lack of strategy was defined as a lack of long-term plans and goals for materials management, and communication problems resulted in inadequate or inaccurate information flow in materials management processes. For example, inappropriate storage conditions can cause medicines to spoil and expose sterile materials to the risk of contamination.

The analysis according to these categories provided a comprehensive perspective to identify the root causes of material management related CPA and helped to develop strategies to address the problems. Periodic self-assessments conducted within the scope of health quality standards enabled materials management issues to be addressed proactively, thus contributing to process improvement.

This chart shows which categories cause the most problems and which categories should be addressed first. In this example, the management, material and environmental categories account for a large proportion of the total problems, so these areas should be prioritized.

The management category has the highest number of issues with 75 issues, accounting for about 26.1% of the total issues. This suggests that management issues such as lack of management support, lack of strategy and communication problems have a significant impact on materials management processes. Resolving management issues can alleviate a large proportion of the overall problems. The material category ranks second with 60 problems, accounting for 20.9% of total problems. Problems related to materials management, such as poor quality materials, wrong material selection and procurement problems, are prominent in this category. Improvements in materials management can eliminate most of these problems. For example, improvements in the material procurement process can minimise operational disruptions and delays by ensuring that critical materials are available on time.

The environmental category covers 18.1% of total issues with 52 issues. Environmental factors such as inappropriate storage conditions, climatic conditions and safety issues play an important role in materials management processes. Improvements in this category will increase the effectiveness of the processes. The machinery category accounts for 13.9% of total issues with 40 issues. Machinery-related issues such as equipment breakdowns, lack of maintenance and technological inadequacy are among the factors that negatively affect materials management processes. Improvements in this area can make processes work more efficiently. Without regular maintenance of equipment, unexpected breakdowns can disrupt operational processes, leading to delays in service delivery.

The human and method categories account for 10.5% of the total problems with 30 problems each. Human factors, such as lack of training, inexperience, lack of motivation, and method issues, such as non-standard processes, lack of procedures, incorrect practices, have a certain impact on materials management processes. Improvements in these categories can improve overall performance. Implementation of regular training programmes for employees can contribute to the reduction of errors in material management processes and increase overall productivity.

Pareto Analysis shows that the categories of management, materials and environment account for a large proportion of the problems associated with materials management. Improvements focusing on these categories can solve most of the overall problems

and increase the effectiveness of materials management processes. Periodic self-assessments conducted within the scope of HQS have enabled these issues to be addressed proactively and thus contributed significantly to the improvement of processes.

3. RESULTS

In the study, a research on periodic self-assessments of quality standards in health services was conducted. The main problems identified using fishbone and pareto analysis were examined in more detail with the Root Cause Analysis method and solutions were developed. Problems and Root Causes can be listed as follows:

- Lack of Management Support, Lack of Strategy and Communication Problems: Uncertainty and lack of communication in senior management.
- Poor Quality Materials, Wrong Material Selection and Supply Problems: Weaknesses in supplier selection and shortcomings in accurate demand forecasting were identified.
- Unsuitable Storage Conditions, Climate Conditions and Safety Issues: Deficiencies in warehouse organization and inadequate security protocols were identified.
- Equipment Failures, Lack of Maintenance and Technological Inadequacy: Deficiencies in maintenance processes and insufficient technological infrastructure were identified.
- Lack of Education, Inexperience and Lack of Motivation: Inadequacy of training programs and lack of motivation were observed.

Table 2: Root Cause Analysis

Problem/RootCause	Action	ResponsibleUnit/Person	CompletionDate
Lack of Management Support, Lack of Strategy and Communication Problems	Clarifying strategic objectives and opening communication channels by organizing meetings with senior management	Senior Management / Hospital Director	Uncertain
Poor Quality Materials, Wrong Material Selection and Supply Problems	Strengthening supplier evaluation processes and using software- based demand forecasting systems	Purchasing Department/ Materials Management Department	Uncertain
Unsuitable Storage Conditions, Climate Conditions and Safety Issues	Establishing warehouse management policies, organizing staff training programs and developing security protocols	Material Management Department / Warehouse Supervisor	Uncertain
Equipment Failures, Lack of Maintenance and Technological Inadequacy	Establish regular maintenance plans, train staff and implement advanced equipment management systems	Technical Services Manager /Clinical Engineering Unit	Uncertain
Lack of Education, Inexperience and Lack of Motivation	Establishing comprehensive training programs, supporting new staff with mentoring systems and implementing performance-based incentive systems	Human Resources Department / Training Coordinator	Uncertain

The table includes the identification of materials management problems in a university hospital and the presentation of proposed solutions. The problems are concentrated in various areas such as lack of management support, material quality, storage conditions, equipment maintenance and staff training. The proposed solution actions for each problem specify the actions to be taken by the relevant units and responsible persons. These solutions can be successfully implemented with the support and coordination of hospital management, but it is important that the process can be monitored and completed in a timely manner. These recommendations provide a comprehensive and strategic approach to the problems faced in materials management in a university hospital. Each problem is assigned to a specific unit or person and held accountable for managing the resolution process. However, the uncertainty of completion dates can make it difficult to track the effectiveness of the solution process. Solution recommendations, such as meetings with top management and clarification of strategic objectives, emphasize the importance of organizational leadership and communication. Furthermore, operational improvements, such as strengthening supplier evaluation processes and establishing equipment maintenance plans, aim to improve the effectiveness of materials management processes. Successful implementation of these recommendations can be possible with the support and cooperation of the hospital management, but it is important that the process can be monitored and completed in a timely manner.

4. DISCUSSION

The findings of this study underscore the critical role of periodic self-assessments in improving materials management within healthcare organizations. By employing tools such as the Fishbone Diagram and Pareto Analysis, the study identified key problem areas and their root causes, offering a comprehensive understanding of the challenges faced in materials management. Significant issues related to management support, material quality, and environmental conditions highlight the need for targeted improvements in these areas. Enhancing management support, improving supplier evaluation processes, and ensuring suitable storage conditions can lead to substantial improvements in materials management, ultimately contributing to better healthcare service quality. The impact of quality management processes, particularly periodic self-assessments, on materials management in the healthcare sector is a critical aspect that significantly influences the quality of healthcare services. A study conducted in a university hospital highlighted the importance of compliance with health standards and the effectiveness of quality improvement initiatives, emphasizing the role of periodic self-assessments in enhancing materials management efficiency (Clavel et al., 2019).

Moreover, the study reveals the importance of addressing human factors and method-related issues in materials management. Lack of training, inexperience, and non-standard processes were identified as critical factors affecting the efficiency of materials management (Grigorovica et al., 2022 ; Katiyar, 2024). Implementing comprehensive training programs, mentoring systems for new staff, and standardizing procedures can significantly enhance the overall performance of materials management processes. These improvements not only increase operational efficiency but also foster a culture of continuous improvement and accountability within healthcare organizations (Novak, 2024).

The study emphasizes the necessity for a holistic approach to materials management, which includes the integration of technological advancements and regular maintenance of equipment. Tackling technological inadequacies and equipment failures through systematic maintenance plans and advanced equipment management systems can prevent disruptions and enhance process reliability (Dodds et al., 2022). Future research should focus on exploring the impact of these interventions across various healthcare settings to validate and expand upon these findings. By continuously monitoring and refining materials management processes, healthcare organizations can ensure the sustainability and enhancement of quality standards, ultimately leading to better patient outcomes and more efficient healthcare delivery (Scala & Lindsay, 2021).

Lastly, the study emphasizes the need for a holistic approach to materials management, incorporating technological advancements and regular maintenance of equipment. Addressing technological inadequacies and equipment failures through regular maintenance plans and advanced equipment management systems can prevent disruptions and enhance process reliability. Future research should focus on exploring the impact of these interventions across diverse healthcare settings to validate and expand upon these findings. By continuously monitoring and refining materials management processes, healthcare organizations can ensure the sustainability and improvement of quality standards, ultimately leading to better patient outcomes and more efficient healthcare delivery. By adhering to rigorous policies and standards, healthcare entities can strengthen their materials management processes, enhancing operational efficiency and elevating overall quality standards (Omaghomi et al., 2023).

Furthermore, the study highlights the broader implications of effective materials management on the sustainability and advancement of healthcare services. By integrating periodic self-assessments into their quality management processes, healthcare organizations can foster a culture of continuous

improvement and innovation in materials management practices (Novak, 2024). This not only enhances operational efficiency but also bolsters the overall quality of care provided to patients. The study underscores the interconnectedness of quality management and materials management, emphasizing the need for a holistic approach to ensure the long-term viability and excellence of healthcare services (Gerard, 2021).

In conclusion, the synthesis of these findings emphasizes the intricate relationship between quality management processes, particularly periodic self-assessments, and materials management within the healthcare sector. By focusing on effective leadership, strict adherence to quality standards, and continuous quality improvement initiatives, healthcare organizations can optimize their materials management processes, improving operational efficiency and enhancing the quality of care for patients. This holistic approach is vital for the sustainability and ongoing enhancement of healthcare services, ensuring organizations remain at the forefront of delivering high-quality, patient-centric care.

5. CONCLUSION AND RECOMMENDATIONS

This study reveals the significant impact of quality management processes, especially periodic self-assessments, on materials management in the healthcare sector. Using a retrospective study in a university hospital, the evaluation examined the level of compliance with health standards and the effectiveness of quality improvement initiatives and explored in depth the impact of these processes on materials management.

The findings show that periodic self-assessments can be an important preventive activity in terms of material management in health services. Examining the problems identified by methods such as Fishbone and Pareto analysis with root cause analysis and developing solutions increases the effectiveness of this process. In this context, healthcare organizations focusing on periodic self-assessment processes and managing these processes effectively can increase efficiency in material management processes and contribute to raising quality standards.

The results of the study provide an important guideline for maintaining and improving quality standards in healthcare services. In particular, healthcare organizations focusing on periodic self-assessment processes and managing these processes effectively can increase efficiency in materials management processes and contribute to raising quality standards. In this context, the importance of studies that further examine the effects of periodic self-assessments on materials management to improve the quality of healthcare services and increase the effectiveness of this process should be emphasized.

As a result, it examines the relationship between quality management and materials management in healthcare in depth and emphasizes that this relationship is critical for the sustainability and improvement of healthcare services. The results of this study provide an important roadmap for the sustainability and improvement of quality standards in healthcare.

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Conflict of Interest:
The authors declare that they have no conflict of interest.

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The Relation Between "Core Business of Corporation" and "Job Satisfaction" In Terms of Doctors and Nurses In Türkiye

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ABSTRACT

High expectations, which been sourced from high challenging skills, high level knowledge and to be hardworking, make healthcare staffs highly separated in work environment. The study was aimed to show whether there is difference between working in corporation in which "Main Business Area" (MBA) is healthcare services and is not healthcare services in terms of job satisfaction of doctors and nurses in Türkiye. The study was made up as "Descriptive" and "Cross-Sectional", based on survey and literature. Hypothesis was tested though "Job Satisfaction Scale Turkish Version" (JSS) which created by Spector (1994) and prepared Turkish version by Yelboğa (2009). 9 Facet out of JSS were evaluated with 4 items for each, total score was calculated through 36 items. "SPSS" was used for evaluating of statistics. Independent Samples t-Test was used for analyzing of hypothesis. While study population consists of doctors and nurses in Türkiye, 258 Participant completed JSS out of 844 population who were sampled through Convenience Sampling and Snowball Sampling. While 147 of all participants were descripted their job in healthcare "MBA" (HMBA), 111 participants were outside. There was a significant difference between two groups in terms of Total Job Satisfaction Means. There was not significant difference between two groups in terms of Pay, Promotion and Fringe Benefits, though there was in terms of Supervision, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work and Communication. As a result; doctors and nurses are openly dissatisfied which work outside HMBA like medical facilities of military or industrial corporations, in Türkiye.

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1.INTRODUCTION

Accreditation and quality exist and are meaningful with educated, expert, smiling and happy staffs in healthcare sector. While educated and expert staffs have been arisen by qualified medical education corporations, cooperated with health corporations, on the other hand, happy healthcare staffs are got though management principals of healthcare.

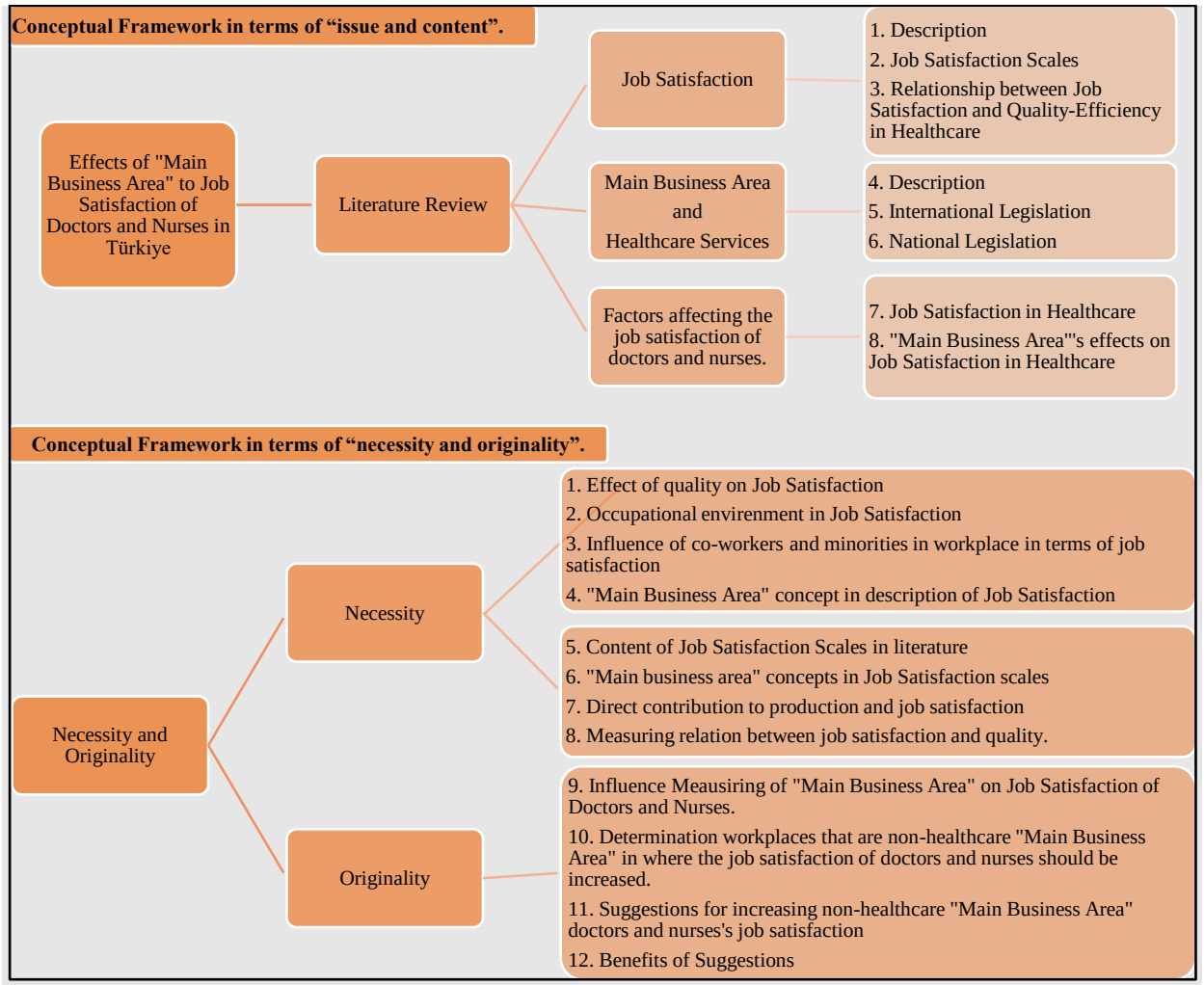
However, healthcare staffs have got some problems which are characterized by high demands, low control, ethical stress, scheduled working hours, low salary and limited career development at workplace (Diepen et al., 2020). These problems make them dissatisfied and high expectations, which been sourced from high challenging skills, high level knowledge and to be hardworking, make them highly separated in work environment. In some studies, job satisfaction has been related with patient satisfaction, thus, discussions about quality on healthcare increasingly focus on job satisfaction on healthcare.

It was aimed to show whether there is difference between working in corporation in which its "Main Business Area" (MBA) is healthcare services and is not healthcare services in terms of job satisfaction of doctors and nurses.

We consider this study to be important because it is expected to fill the gap in the literature on the problems and needs of healthcare professionals working outside the main business of healthcare services, such as military facilities, industrial organizations or ships.

Conceptual Framework of study was planned as in Figure 1 in terms of "issue and content" and "necessity and originality" separately.

Figure 1: Conceptual Framework in terms of "issue and content".and "necessity and originality"



In literature, there are many researches about relationship between job satisfaction and other facets such as pay, management, organization, occupational status etc. However, there is not study about relationship between "MBA" and job satisfaction.

It was targeted to develop new suggestions on job satisfaction of doctors and nurses who work in healthcare facilities got "MBA" out of healthcare services such as military bases and other industrial facilities. Therefore, the "Theoretical Framework" was determined that "MBA" of corporation should be included, as influencing factor, to "Job Satisfaction Theories".

Job satisfaction is extent to which people like or dislike their job, in other means, people satisfied or dissatisfied with their job. Job satisfaction is an attitude (Spector P. E., 2022). According to Hoppock; job satisfaction is provided psychological and environmental situations for employee which can make them pleasure with job. Vroom and Locke submitted that job satisfaction is related in happiness in business and it is affected by role in business, situation of work and sensual situation of staff (Başol & Çömlekçi, 2020). Tanner as well accepts job satisfaction as an attitude which based on employee's perceptions of their job or work environment. Tanner explains work environment as combination of employee's needs, values and personal characteristics (Tanner, 2007). Moreover, job satisfaction is affected by personality type, coping skills, fairness, trust and organizational involvement of employee as well (Wesolowski & Mossholder, 1997).

Job satisfaction has been defined as positive affect to employment by Mueller and McCloskey and an evaluation of how job meets employee's demands by Fisher (Martins & Proença, 2012). Employees want to feel their importance for corporation. Work related rewards as well influence job satisfaction of employees (Tanner, 2007).

The Model of Care (MoC) which the most affective structure part of work environment in healthcare can be defined as "delivering right care, to right people, at the right time, by the right team and in the right place" in healthcare (Diepen et al., 2020). Doctors and nurses who working in healthcare department of corporations from different "MBA", carry out healthcare services in different style of delivering, to different people, at different time rules and ranges, by different team numbers or personnel and in different places. These situations bring about different levels of MoC logically, whereas "Program of Transformation in Health" in Türkiye suggest accredited and standardized healthcare services (Akdağ, R., 2003). Consequently, even though healthcare services are delivered outside healthcare sector, high and standardized quality should be protected. It has been evaluated that work environment is shaped and affected by "MBA", since every main business sector has got unique work circumstances for both management and employee.

Given healthcare services has got distinct properties such as asymmetric knowledge, irrationality in demand, public service feature in supply and cannot be postponed, cannot be substituted, it is highly common that healthcare services should got unique management process and unique work environment. Therefore, in every "MBA", healthcare services are sensitive to manage system.

"MBA" is the activities toward main aiming target of corporation. This term is expressed as "Core Business" in Cambridge Dictionary and is meant as "the most important or the largest part of a company's business activities". Working for main business targets, corporation conducts personnel and logistic activities as well. One of the most important activities for employees are healthcare services which are submitted, from emergency medical services to occupational health services. Doctors and nurses submit service to patients in hospitals and other healthcare corporations such as medical centers, furthermore, hospitals' and other healthcare centers' corporative target is the submission health service to whole public, while doctors and nurses who work in other sectors submit service to employees only.

Playing fundamental role in maintaining global healthcare system, doctors and nurses are the minority in corporations whose "MBA" is not healthcare such as military, industry, shipping or other service sectors. With discriminative occupational attitudes, education, ethical beliefs, aims, doctors and nurses are inadequate numbers as global. Densities of doctors and nurses were 16,3 and 39,4 per 10.000 population respectively in 2014 and 2021, according to World Health Organization (WHO). These densities were 20,4 and 34 respectively for Türkiye in 2023 (WHO, 2023).

According to estimates published by WHO in 2022, while global health workforce shortage was 15 million in 2020, it will be 10 million in 2030. This is very significantly decrease compared to earlier projection as 18 million for 2030 (Ghebreyesus, 2022). That is, growing of health workers is inadequate as well.

Groving value and significance of doctors and nurses globally make more important their job satisfaction. When doctors and nurses dissatisfied in occupational aspects, they prefer to live and work in other countries which developed economically mostly. Doctors' and nurses' migration from under developing and undeveloped countries to developed countries have increased year by year. Developed countries such as Belgium, Canada, Germany receives immigration as doctors increasingly and Belgium, Canada, France, Germany and United Kingdom receives immigrant nurses increasing rates continually (OECD, 2023).

Although there are some studies on demographic minorities in workplace such "race" (Ford & Bagot, 1978) or "gender" (Cameron, 2001), there is not research in literature on occupational minority in workplace. In workplace, demographic dissimilarity

and distinguishing factors such as age, sex, race, education, tenure, related in decreasing occupational performance and occupational commitment according to some researches (Tsui et al., 1992). Healthcare professionals work in workplaces which are outside of health "MBA" as minority in terms of both technical and personal. The most prevalent of these workplaces are military bases and industry facilities in Türkiye. Therefore, in this study, we wanted to know whether it exists significant different in terms of job satisfaction in workplaces between health "MBA" and out of health "MBA", for doctors and nurses. It was set Nullity Hypothesis (H_0) as; The job satisfaction level of doctors and nurses working in workplace whose "MBA" is Health Services is not significantly different from level of doctors and nurses working in workplace whose "MBA" is not Health Services.

In terms of economic, the main business is "the goods or services production that constitute the technical purpose of the workplace" (Erkanlı, 2016). In "business law" area, "Main Business" expresses the activities which directly related to the realization of the technical purpose of the workplace, that is, of the production of intended goods or services. Moreover, it refers to essential activities which directly involved in the process that is aimed at the realization of this technical purpose (Mollamahmutoglu et al., 2022). The most important component of definition of "main business" is known that the process from first step of the production to customer. Since every step of work involved to "main business" throughout the process, it is important in terms of business law.

International Labor Organization (ILO) has classified 3 main areas for "22 industries and sectors" as industrial activities, maritime industries and services (Jason, 2007). Turkish Official Legislation, in regulations no. 28502 and 28509, has defined 20 "MBA s" as "1. Hunting, fishing, agriculture and forestry, 2. Food industry, 3. Mining and quarries, 4. Petroleum, chemical, rubber, plastic and pharmaceutical industry, 5. Weaving, ready-made clothing and leather, 6. Wood and paper, 7. Communication, 8. Press, broadcasting and journalism, 9. Banking, finance and insurance, 10. Commerce, office, education and fine arts, 11. Cement, soil and glass, 12. Metal, 13. Construction, 14. Energy , 15. Transportation, 16. Shipbuilding and maritime transportation, storage and warehousing, 17. Health and social services, 18. Accommodation and entertainment business, 19. Defense and security, 20. General business" (Official Journal Of Republic Of Türkiye, 2012), (Official Journal Of Repaublic Of Türkiye, 2012). In regulation no. 28502, health services have been classified under title of "health and social services". Health services have covered human health services as "hospital services, practical activities related in medical, dentistry and other services related in human health activities" (Official Journal Of Republic Of Türkiye, 2012).

In Republic of Türkiye, "Provider of Healthcare Services" have been defined in regulation no. 31746 in terms of legislation. According to Regulation No. 31746; "Provider of Healthcare Services" consist of 3 levels (Official Journal, 2022).

Since it was involved the doctors and nurses to study, it was needed also to describe official tasks of doctors and nurses in Türkiye. According to "Regulation on Job and Job Descriptions of Healthcare Professionals and Other Professionals Working in Health Services" no. 29007; doctors are responsible for protecting individuals and public out of problem on health, sickness and injuries, performing diagnosis and treatment, preventing complications (Official Journal, 2014). Nurses, according to "Regulation of Nursing" no. 27515, determine the health-related needs of the individual, family and society in every environment that can be met with nursing interventions, and plan, implement, evaluate and supervise nursing care based on evidence within the framework of the needs determined within the scope of the nursing diagnosis process (Official Journal, 2010). Although job satisfaction appears conceptually simple, it can be very complex to include into theoretical framework and to measure of level (McNabb, 2009).

2. MATERIALS AND METHOD

This study was planned as a "Descriptive" and "Cross-Sectional" study based on survey and literature. Our "Null Hypothesis" was "The job satisfaction level of doctors and nurses working in workplace whose "Main Business Area" is Health Services is not significantly different from level of doctors and nurses working in workplace whose "Main Business Area" is not Health Services".

After applying to "Istanbul Okan University Ethical Board", it has been allowed to perform online job satisfaction scale (JSS), ethically. While study population consists of doctors and nurses in Turkiye, it was targeted to reach as wide population as it can, as sampling. It was started to Convenience Sampling in two "watsapp" (a communication application for groups) groups of "Graduated of Republic of Türkiye Erciyes University Medical Faculty" doctors having started school in 1988 (n=100) and 1990 (n=149). Moreover, it was allowed to survey at nurses from "Türkiye Workplace Nurses Association" (n=95) and at doctors from "Türkiye Workplace Doctors Association" (n=500) as well. Surveys were reached to these 4 groups by sending survey's URL address for filling online. After study had been accelerated by Convenience Sampling, Snowball Sampling was started to perform for increasing number of participants for survey. 258 participants filled JSS (Turkish Version), which it was named as JSS-PN in this study, in totally, from Dec 14th,2023 to Feb 23rd,2024.

Searching literature was performed according to planned Conceptual and Theoretical Frameworks of study.

It has been preferred "Job Satisfaction Survey" (JSS) by E.Paul Spector (1994) (Spector P. E., 1994) for measuring occupational satisfaction, and "JSS Turkish Version" from Atilla Yelboğa (2009) was used (Yelboğa, 2009). JSS was preferred, because it was the most preferred scale in PhD thesis studies on job satisfaction in Türkiye (Özsoy et al., 2014). Moreover, its validity and reliability have been proven in different professions in both English and Turkish (Spector E. P., 2024) (Yelboğa, 2009), job satisfaction can be questioned from different aspects related in healthcare management area via JSS. JSS was originally developed for use in human service organizations (Spector E. P., 2024). The survey consists of 36 items which involve 9 facet scales. Each facet scale measures a different attitude of employees, about the job. The nine facets consist of Pay, Promotion, Supervision, Fringe Benefits, Contingent Rewards (performance-based rewards), Operating Procedures (required rules and procedures), Coworkers, Nature of Work, and Communication. Each facet is evaluated with 4 items. Total score is summed through all items. "Job Satisfaction Survey for Physicians and Nurses" (JSS-PN) consist of 8 demographic questions about gender, job (Doctor&Nurse), MBA, Status of Corporation, Occupational Status, Professional Experience Period, Pay (Monthly Salary) and Occupational Position in addition to 36 items of Turkish version JSS.

JSS has been developed with Six-Point Likert Scale from "strongly disagree" to "strongly agree", in two direction, positive and negative. Score is determined in range from 4 to 24 in 4 items for each 9 facet subscales. Score for all job satisfaction in 36 items can range from 36 to 216. High scores on the scale represent job satisfaction, so the scores on the negatively worded items must be reversed before summing with the positively worded into facet or total scores (Spector E. P., 2024). Responses to the items are numbered from 1 representing strongest disagreement to 6 representing strongest agreement with each. Negatively worded items were 2, 4, 6, 8, 10, 12, 14, 16, 18, 19, 21, 23, 24, 26, 29, 31, 32, 34, 36 and these items were reversed for accurate summing in SPSS. Survey subscales, subscale descriptions and scaling item numbers were submitted below (Table 1).

Table 1: Facet Subscales represented according to items (Spector E. P., 2024).

Facet Subscale	Description	Item numbers
Pay	Pay and remuneration	1, 10, 19, 28
Promotion	Promotion opportunities	2, 11, 20, 33
Supervision	Immediate Supervisor	3, 12, 21, 30
Fringe Benefits	Fringe Benefits (Monetary &Nonmonetary)	4, 13, 22, 29
Contingent rewards	Appreciation, recognition, rewards for good work	5, 14, 23, 32
Operating conditions	Operating policies and procedures	6, 15, 24, 31
Coworkers	People working with	7, 16, 25, 34
Nature of work	Job Tasks Themselves	8, 17, 27, 35
Communication	Communication within the organization	9, 18, 26, 36
TOTAL		1-36

JSS Turkish Version was scaled as statistical by Yelboğa (Yelboğa, 2009) in terms of validity and reliability. Cronbach alfa coefficient for each facet is scaled range from 0,63 to 0,88 and overall reliability was scaled 0,78 for 36 items of Turkish version JSS (Türkiye Sample-2009, n=380). Its scale range for each facet had been scaled from 0,62 to 0,82 in original JSS study by Spector (America Sample-2007, n=2870) as well. And overall reliability was 0,91 (Yelboğa, 2009). It was used "logically cut scores" created by Spector, for representing satisfaction versus dissatisfaction as absolute scoring. Scoring, after reversing negatively worded items, was calculated according to "Mean Scores" as below (Table 2).

Table 2: Mean Scores from JSS (Spector E. P., 2024).

For 4 Items Subscales	4-12	Dissatisfied
	12-16	Ambivalent
	16-24	Satisfied
For 36 Items Total	36-108	Dissatisfied
	106-144	Ambivalent
	144-216	Satisfied

"SPSS Statistics data editor" was used for analyzing of statistical results. After frequency and descriptive analyses, Independent Samples t-Test was used for evaluating to significance of difference between working in and outside "Healthcare Main Business Area" (HMBA) who working doctors and nurses as healthcare staff in terms of Job Satisfaction and 9 facets of Spector.

3. RESULTS

Total 258 participant completed JSS-PN with valid response (i.e. missing values:0). According to Frequency Analysis (Table 3); 153 of participants were Female, while 105 were Male and 171 participants were

doctor, 87 were nurse as demographically. While 147 (57,0%) of all participants were descripted their job in healthcare "MBA", 111 (43,0%) participants work outside healthcare "MBA".

Table 3: Demography of Participants.

		Count	Column N %
Gender	Female	153	59,3
	Male	105	40,7
Job	Medical Doctor	171	66,3
	Nurse	87	33,7
Main Business Area	Healthcare Main Business Area	147	57,0
	Out of Healthcare Main Business Area	111	43,0
Status Of Corporation	Public	215	83,7
	Private	38	14,8
	Foundation	4	1,6
Professional Status of The Participant	General Physician	100	38,8
	Assistant Physician	7	2,7
	Physician with Master's Degree in Med	0	,0
	Physician with a Doctorate Degree in Med	0	,0
	Specialist	51	19,8
	Lecturer Specialist	13	5,0
	Health High School Graduate Nurse	6	2,3
	Health Academy Graduate Nurse	15	5,8
	Health Faculty Graduate Nurse	35	13,6
	Nurse with Master's Degree in Med	31	12,0
	Nurse with a Doctorate Degree in Med	0	,0
	Lecturer Nurse	0	,0
Occupational Experience Duration of The Participant	2 years and less	9	3,5
	3-5 years	14	5,4
	6-10 years	17	6,6
	11-20 years	59	22,9
	21-25 years	89	34,5
	26 years and more	70	27,1
Monthly Salary	22.000 TL and less	5	1,9
	23.000-35.000	62	24,0
	36.000-45.000	51	19,8
	46.000-65.000	73	28,3
	66.000 and more	67	26,0
Occupational Position	Non-Healthcare Worker	1	,4
	Healthcare Worker Group Member	197	76,4
	Healthcare Worker Group Leader	35	13,6
	Junior Manager	6	2,3
	Middle Manager	12	4,7
	Senior Manager	7	2,7

When frequency analysis of gender and job was evaluated according to work in or out of HMBA, it can be said that doctors and nurses have preferred to work outside HMBA 39,8% and 49,4% respectively. Female gender participants were seen that they were tend to work in HMBA instead of outside as a healthcare staff. When it comes to "Job Features" (Table 4), while both doctors and nurses work in rates of 80-90% in public sector for both inside and outside HMBA, private sector's rate of 18,0% for outside HMBA is noteworthy compared with 12,3% for inside. Even if specialist doctors' rate is low with 10,8% outside HMBA, general physicians with 49,5% and health faculty graduated nurses with 16,2 are high rates when they compare with rates inside HMBA.

Table 4: Frequency analysis According to Job Features In or Out of Healthcare Main Business Area.

		Main Business Area			
		Healthcare Main Business Area		Out of Healthcare Main Business Area	
		N	%	N	%
Status Of Corporation	Public	127	87,0	88	79,3
	Private	18	12,3	20	18,0
	Foundation	1	,7	3	2,7
Professional Status of The Participant	General Physician	45	30,6	55	49,5
	Assistant Physician	7	4,8	0	,0
	Physician with Master's Degree in Med	0	,0	0	,0
	Physician with a Doctorate Degree in Med	0	,0	0	,0
	Specialist	39	26,5	12	10,8
	Lecturer Specialist	12	8,2	1	,9
	Health High School Graduate Nurse	4	2,7	2	1,8
	Health Academy Graduate Nurse	7	4,8	8	7,2
	Health Faculty Graduate Nurse	17	11,6	18	16,2
	Nurse with Master's Degree in Med	16	10,9	15	13,5
	Nurse with a Doctorate Degree in Med	0	,0	0	,0
	Lecturer Nurse	0	,0	0	,0
Occupational Experience Duration of The Participant	2 years and less	4	2,7	5	4,5
	3-5 years	5	3,4	9	8,1
	6-10 years	11	7,5	6	5,4
	11-20 years	30	20,4	29	26,1
	21-25 years	42	28,6	47	42,3
	26 years and more	55	37,4	15	13,5
Monthly Salary	22.000 TL and less	2	1,4	3	2,7
	23.000-35.000	41	27,9	21	18,9
	36.000-45.000	25	17,0	26	23,4
	46.000-65.000	43	29,3	30	27,0
	66.000 and more	36	24,5	31	27,9
Occupational Position	Non-Healthcare Worker	0	,0	1	,9
	Healthcare Worker Group Member	118	80,3	79	71,2
	Healthcare Worker Group Leader	19	12,9	16	14,4
	Junior Manager	2	1,4	4	3,6
	Middle Manager	5	3,4	7	6,3
	Senior Manager	3	2,0	4	3,6

Mean points showed that; question 27 "I feel a sense of pride in doing my job" has got the highest score. 4,31 means that; "agree" with this item. Furthermore, question 7 and 25, about coworkers, are two items have got high points. However, question 1 "I feel I am being paid a fair amount for the work I do" has got the lowest score. After question 1, question 11 and 28 are the lowest scored items in scale. These items related in salary and promotion of status.

Both in and outside HMBA, both for Job Satisfaction and 9 facets, sum of scores distribute normal in terms of statistically.

"Independent Samples t-Test" was used to scale significance of difference between working in and outside HMBA for doctors and nurses in Türkiye. There was a significant difference between two groups in terms of Total Job Satisfaction Means. Moreover, there was not significant difference between two groups in terms of Pay, Promotion and Fringe Benefits, though there was significant difference between two groups in terms of Supervision, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work and Communication (Table 5).

Table 5: Independent Samples t-Test for Relation Between "Main Business Area" and Total Job Satisfaction with 9 Facet Means and Comparison Means of Two Groups in terms of all variables.

Facet	Independent Samples Test				Comparison Means of Two Groups in terms of sub-dimentions		
		t-test for Equality of Means					
		t	df	Sig. (2-tailed)	Main Business	Mean	Std. Deviation
Job Satisfaction Sum	Equal variances assumed	5,30	256,00	**,000**	Healthcare	114,76	26,12
	Equal variances not assumed	5,03	183,64	**,000**	Out of HC	93,48	38,34
Pay Sum	Equal variances assumed	-1,12	256,00	**,266**	Healthcare	9,13	4,68
	Equal variances not assumed	-1,11	233,78	**,267**	Out of HC	9,79	4,80
Promotion Sum	Equal variances assumed	1,32	256,00	**,189**	Healthcare	10,01	3,87
	Equal variances not assumed	1,30	227,38	**,194**	Out of HC	9,35	4,16
Supervision Sum	Equal variances assumed	5,16	256,00	**,000**	Healthcare	13,78	5,04
	Equal variances not assumed	5,00	204,83	**,000**	Out of HC	10,13	6,34
Fringe Benefits Sum	Equal variances assumed	-,74	256,00	**,460**	Healthcare	10,31	4,40
	Equal variances not assumed	-,72	213,26	**,471**	Out of HC	10,76	5,22
Contingent Rewards Sum	Equal variances assumed	3,29	256,00	**,001**	Healthcare	12,21	4,48
	Equal variances not assumed	3,26	227,54	**,001**	Out of HC	10,30	4,81
Operating Conditions Sum	Equal variances assumed	4,11	256,00	**,000**	Healthcare	12,74	3,87
	Equal variances not assumed	4,12	238,91	**,000**	Out of HC	10,76	3,81
Coworkers Sum	Equal variances assumed	7,33	256,00	**,000**	Healthcare	15,75	4,18
	Equal variances not assumed	6,92	176,49	**,000**	Out of HC	10,86	6,49
Nature Of Work Sum	Equal variances assumed	6,49	256,00	**,000**	Healthcare	16,01	4,88
	Equal variances not assumed	6,36	216,55	**,000**	Out of HC	11,74	5,66
Communication Sum	Equal variances assumed	7,43	256,00	**,000**	Healthcare	14,81	4,40
	Equal variances not assumed	7,07	184,38	**,000**	Out of HC	9,79	6,43

Sig>0,05* Confidens %95 p<0,05

Comparison of two groups means was analyzed in terms of consist of means and standard deviations. "Supervision, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work and Communication" have got higher means inside HMBA for doctors and nurses in Türkiye.

4. DISCUSSION

Rate of 43,0% for working outside HMBA is the noteworthy value for doctors and nurses, when it is taken into account global shortage of doctors and nurses. In totally, nurses and females tend to prefer for working as healthcare staff in HMBA, more than doctors and males. This linkage may be related that nurses are still women in Türkiye mostly. However we know that there are much more doctors than nurses, outside HMBA as military and occupational physician. There are 43.000 occupatioanal physician comaparison with almost 15.000 occupational nurses in Türkiye. This may be related in obligations arising from legislation.

In totally, 12,7% of doctors and nurses were satisfied, while 30,2% were ambivalent and 57,1% were dissatisfied in this study. This situation was consistent with other similar studies (Deshmukh et al., 2023). Doctors and nurses who work outside HMBA work for private sector in rates of 20%, while they work in public sector with 80%. It must be evaluated that they are experienced with 11 years and up in rate of almost 82%. Though they are paid salary 45000£ and lower in rate of 45%, they are not appointed to status as manager or

leader (85,6%), while they have got high education level compared with average of general public. This situation highlights that doctors and nurses work numbers should not be underestimated outside HMBA in Türkiye. We have to be awareness of shortage of doctors and nurses both in Türkiye and globally, while public and private sectors employ experienced doctors and nurses by paying insufficient salary in low occupational status outside HMBA.
The numerical inadequacy and dissatisfaction of doctors and nurses results in out-migration of healthcare professionals in Türkiye, as in most countries.
Question 27 "I feel a sense of pride in doing my job" has got the highest mean point. This was evaluated that compatible with former much study in literature about doctors and nurses who are habit and pride hard work situations and distress job circumstances mostly mostly (Aydin et al., 2021), (Burstyn & Holt, 2022). According to our survey and JSS, on those who do well on the job is not believed to stand a fair chance of being promoted mostly, and this situation is required to be explained whether it relate with work environment as "MBA". Following question 1, question 11 and 28 are the lowest scored items in scale showed that doctors and nurses feel unsatisfied about pay and promoted status for their work generally.
There is significant difference between in and outside HMBA groups in terms of Job Satisfaction according to our study. Therefore, we can accept that "The job satisfaction level of doctors and nurses working in workplace whose "MBA" is Health Services is significantly different from level of doctors and nurses working in workplace whose "MBA" is not Health Services". Moreover, Job Satisfaction score inside HMBA was higher than outside as 114,76 versus 93,48. Thus, we can evaluate that; doctors and nurses who work in HMBA are ambivalent on job satisfaction, while they are openly dissatisfied outside HMBA, in Türkiye.
This result shows that despite everything, they find working inside HMBA more satisfactory.
"Supervision, Contingent Rewards, Operating Conditions, Coworkers, Nature of Work and Communication" are problems be needed to evaluation separated from common problems in terms of HMBA, because of all of these 6 facets have got higher significantly averages inside HMBA for job satisfaction, among doctors and nurses. "Coworkers, Nature of Work and Communication" are more noted facets than other, because of greater differences of averages between in and outside HMBA.
Appreciation, recognition, rewards for good work as contingent rewards are as effective factors on job satisfaction as supervision, according to our study. Contingent reward effect job satisfaction positively only if it is fairly.

We have argued that, in introduction of this study, occupational environment is the most important component which is structured by "MBA" of corporation. Operating policies and procedures as "Operating Conditions" create occupational environment together with coworkers, nature of work and organizational communications. In line with our claim, MBA affect these 3 facets and supervision with job satisfaction significantly according to this study.
It is sure that, significant difference between in and outside HMBA about supervision, operating conditions, coworkers, nature of work and organizational communications, as component of job satisfaction, has existed due to insufficient understanding of healthcare services conceptually and theoretically, by nonmedical managers and leaders of outside HMBA.

5. CONCLUSIONS

Doctors and nurses are the most important component of health workforce. When we evaluate working doctors and nurses in 43% outside HMBA, we should take into consider that doctors and nurses whose shortage is accepted by everyone work in military bases, industrial facilities or various factories in almost half. Their job satisfaction is a crucial requirement for healthy community and qualified health services.
Supervision, operating conditions, coworkers, nature of work and organizational communications are important components of job satisfaction and are affected facets by MBA. Therefore, in this study, job satisfaction is the factor affected by MBA of corporation in terms of doctors and nurses in Türkiye.
Nonmedical management approaches carry out restriction for doctors and nurses in terms of technical and managemental. Mostly, pay increasing is seen as only one solution for dissatisfaction that searched from this restriction. However, this study submitted that; managemental support activity by supervisor is important for supervision of healthcare staff outside HMBA. To make sense of pride of work to staff and providing them technical support increase job satisfaction of doctors and nurses for operating conditions. Via struct an organization consisted of only healthcare personnel outside HMBA may increase job satisfaction of doctors and nurses for coworker and organizational communication in Türkiye. Furthermore, manager and leader personnel outside HMBA should be respectful and understanding scientific knowledge, scientific attitudes, ethical behaviors peculiar to doctors and nurses.
In this study, "Coworkers, Nature of Work and Communication" are facets which have greater differences of averages between in and outside HMBA. In conditions outside HMBA, these factors make it difficult for healthcare professionals to adapt to the environment and are related to work culture. Therefore, our study also proves that creating an environment

where healthcare professionals can maintain their own work culture, ethics and approaches in workplaces outside HMBA will have positive effects on their job satisfaction.

This study had two limitations. First, this is a validation study which data were collected online. Therefore, the sample consisted of doctors and nurses who were able to complete web-based questionnaires. Second, the participants had similar characteristics. Therefore, future studies should recruit corporate, larger and more heterogeneous samples.

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The authors declare that they have no conflict of interest.

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Bibliometric and Content Analysis of Articles on Artificial Intelligence in Healthcare

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ABSTRACT

The use of artificial intelligence in the healthcare sector is becoming widespread for reasons such as analyzing digital patient data, including it in decision-making processes, improving the quality of healthcare services, and providing cost, time, and access advantages. This study aims to evaluate published articles on bibliometric indicators and the use of artificial intelligence in the healthcare sector and examine the content of the most cited articles. Articles about artificial intelligence in the health sector in the Web of Science database were included in the study using the criteria of "keyword, publication year, and publication language". The research covers 2,680 articles published in English by 14,195 authors from 106 countries in 1084 journals between 2020-2024. 4,671 different keywords were used in the published articles. The country that published the most was "USA", the journal was "Journal of Medical Internet Research", the author was "Meng Ji", and the most cited author was "Weihua Li". The 55 most cited (≥50) articles focused on themes related to "diagnosis of COVID-19 disease", "diagnosis of diseases", "detection and classification of cancerous cells", "identification of disease risk factors and disease prediction", "prediction of treatment outcomes", "prediction of disease course", "personalized treatment recommendations", "decision-making processes", "ethical considerations, risks, and responsibilities". With the COVID-19 pandemic, it is seen that the number of articles on artificial intelligence in the healthcare sector has increased exponentially. In the research, articles related to artificial intelligence in the health sector were examined, and a framework was created for researchers by revealing the most publishing countries, journals, authors, most cited authors, and keywords that were used the most.

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1.INTRODUCTION

Digitalization in the health sector is increasing day by day. Digital technologies in health services allow health data to be created and stored electronically. The use of electronic health records (EHRs) is becoming essential to improve the quality of healthcare, health outcomes, and public health and reduce chronic diseases (Tekin and Emikönel, 2023). While it is important to have health data, it needs to be analyzed and used in decisions to turn it into a benefit.

Analyzing EHRs helps health professionals make rational decisions (Türkmen and Özkara, 2001). However, due to limited access to health data, reluctance and concerns of health institutions to share data, privacy and confidentiality violations, legal regulations on the confidentiality of personal information, and the lack of sufficient expert data analysts in health institutions, the potential of EHRs to improve decisions and outcomes in health services cannot be sufficiently utilized (Rankin et al., 2020). Until recently, organizing, analyzing, interpreting, and understanding large amounts of EHRs depended entirely on human knowledge, skill, and intelligence. Recently, artificial intelligence (AI) technologies have been used to analyze medical data (Srivastava et al., 2021). By analyzing big health data, AI can uncover relationships that humans cannot detect. The primary purpose of using artificial intelligence in healthcare is to analyze the relationships between disease prevention, diagnosis and diagnostic processes, treatment techniques, monitoring of the disease process, and patient outcomes (Bickman, 2020).

Kaplan and Haenlein (2019:17) define AI as “the ability of a system to accurately interpret external data, learn from such data, and use this learning to achieve specific goals and tasks through flexible adaptation”. AI refers to "the ability of a machine to imitate intelligent human behavior." AI refers to the branch of computer science that focuses on developing computer algorithms to perform tasks traditionally associated with human intelligence (Tang et al., 2018). AI includes many types of programs and algorithms. A critical type of AI is machine learning (ML). ML is “the creation of algorithms that can learn from data and make predictions based on data” (Bickman, 2020). ML can be defined as “an automated process that supports predictions and decision-making by allowing machines to analyze a large data set, recognize patterns, and learn from data” (Wang and Siau, 2019). Deep learning (DL) is a sub-branch of machine learning and is "the creation of learning algorithms using large amounts of data in a similar way to how the human brain works" (Bickman, 2020).

AI, ML, and DL have successfully discovered complex structures in large amounts and different data dimensions. For this reason, it is used in many sectors today (LeCun et al.,2015). Especially in the health sector, its use is becoming widespread. AI has the potential to make a significant contribution to healthcare by analyzing complex and large health data with its feature of “imitating human cognitive functions”. AI is used to collect and analyze data and provide useful outputs to the end user (Ye et al., 2024). Artificial intelligence is rapidly moving from the experimental stage to the applied stage in many fields, including medicine. The availability of large data sets, increased computing power, and advances in learning algorithms have provided great impetus for the development of AI applications (Tang et al., 2018). AI offers the potential to revolutionize evidence-based, cost-effective, and personalized medical practice (Dilsizian and Siegel, 2014).

AI methods are used in applications such as diagnosis and diagnostic processes, treatment protocol development, patient follow-up and care, individualized treatment strategies, and drug development (Bickman,2020). In a study conducted by Esteva et al. (2017), it was reported that AI performed equivalent to dermatologists in diagnosing dermatologic diseases. AI has been used extensively in fields such as radiology and pathology to speed up diagnostic processes and increase accuracy. The use of AI technologies in healthcare can help reduce diagnostic and treatment errors. Using EHRs and other health data, AI can help make inferences for health outcome prediction and health risk alerts. AI can improve healthcare quality and patient safety (Ye et al., 2024). The impacts of AI techniques on healthcare systems are being applied in medicine to reduce treatment costs, ensure cost-effectiveness, improve service quality, improve patient satisfaction, and reduce readmission and mortality rates (Krittanawong et al., 2017).

In the research conducted by Emikönel, Türkmen and Tekin (2024), it was concluded that artificial intelligence, machine learning and deep learning are used in the field of radiology in subjects such as "disease diagnosis", "detection and classification of cancerous cells", "disease prediction" and "personalized treatment recommendations". In the said research, attention is drawn to the concerns, difficulties and problems caused by artificial intelligence and its components in healthcare services as well as the benefits they provide.

In addition to being used by healthcare professionals in the clinical environment, AI will help manage patients' chronic conditions with smart devices. Beyond the clinical setting in AI, healthcare institutions need to allow data sharing and use to be adopted by healthcare professionals and to gain patients' trust. However, there are still concerns about data privacy, data misuse, unauthorized access, violation of patient privacy, and transparency regarding the use of AI in healthcare (Vayena et al., 2018). Countries have adopted strict protocols regarding the sharing of health data. These

regulations restrict the access of data. The stringent measures taken for the protection and privacy of patient data pose significant challenges in the usability of large data sets (Bhattacharya et al., 2021).

AI systems need to be sensitive in their use in a sector such as healthcare, where vital and life-changing decisions are made. Biased algorithms may cause inequalities in access to healthcare services and treatment processes for some groups. Biases and prejudices in AI algorithms should be prevented from leading to discriminatory and unfair behavior towards certain groups (Mehrabi et al., 2021). In a study conducted by Seyyed-Kalantari et al. (2021), it was determined that biased results can be achieved in the interpretation of chest X-ray images with artificial intelligence. Biased AI algorithms can incorrectly label a person with a disease as healthy, delaying access to care or causing under diagnosis. This raises ethical concerns about the use of AI models in the clinic. With the use of AI systems in healthcare, the need for more transparency in decision-making processes likely creates serious problems regarding accountability and responsibility. In particular, there are uncertainties about who should be held accountable for errors caused by algorithms (Novelli et al., 2023).

This wide-ranging review of AI applications in the healthcare sector reveals the technology's potential benefits and challenges. In this context, our study's methods and materials section will describe in detail the scientific methodology and data collection process on which our research is based.

2. MATERIALS AND METHOD

Research Method

This study used bibliometric analysis, which has become a critical research methodology in recent years (Ellegaard and Wallin, 2015). Bibliometrics is "a field of research that examines publications in the literature using quantitative methods" (Broadus, 1987). Bibliometric methods "identify general trends in terms of publications, citations, authors, keywords, countries, and journals and provide a general framework for the relevant topic" (Martinez-Lopez et al., 2018).

Purpose of the Research

The use and benefits of AI and its components in healthcare services are increasing. In this context, this study aims to conduct a bibliometric analysis of articles focusing on the use of AI in healthcare based on the Web of Science (WOS) Database and to analyze the most cited articles in terms of content. In line with the purpose of the study, 8 research questions were identified.

Research question 1: What is the distribution of articles on the subject according to years?

Research question 2: What is the distribution of relevant articles by country?

Research question 3: Which authors have published the most articles?

Research question 4: Which authors are the most cited on the topic?

Research question 5: Which journals publish the most articles on the topic?

Research question 6: What are the most commonly used keywords in articles on the topic?

Research question 7: Which articles on the topic are the most cited?

Research question 8: What are the research findings of the most cited articles on the topic?

Inclusion and Exclusion Criteria

Research data were obtained from the WOS database. Keywords at the subject and title level, article, publication year, and publication language were used as inclusion criteria. The search criteria are given in Table 1.

Table 1. Research Inclusion and Exclusion Criteria

Search steps	Number
Key Words Topic: "health" Title: "Artificial Intelligence" or "machine learning" or "deep learning" and "diagnosis" or "treatment" or "disease" or "illness" or "sickness" or "health" or "patient monitoring" or "medical care" or "health care"	4.846 Document
Document Types: Article	3.063
Publication Years: 2020-2024	2.701
Publication Languages: English	2.680

On 20.03.2024, 4,846 publications were accessed by using the keywords "health" at the subject level and "Artificial Intelligence" or "machine learning" or "deep learning" and "diagnosis" or "treatment" or "disease" or "illness" or "sickness" or "health" or "patient monitoring" or "medical care" or "health care" at the title level among the publications in the WOS database. Within the inclusion and exclusion criteria framework, 2,680 articles published in English in 2020-2024 were included in the study.

Data Analysis

The data collected from the WOS database, including the year of publication, country, journal, author, and citation numbers of the articles, was subjected to a comprehensive analysis. This analysis, which was carried out using Excel and VOSviewer software,

provided a detailed and accurate understanding of the trends and patterns in the field. Additionally, 61 articles with 50 or more citations were subjected to rigorous content analysis, further enhancing the depth of our findings.

3. RESULTS

Bibliometric Results

As of 20.03.2024, the WOS database contained 2,773 articles on AI in health. The number of articles published on the subject has increased in the last ten years, especially during and after the COVID-19 pandemic. The most articles were published in 2023 (790, 28.49%).

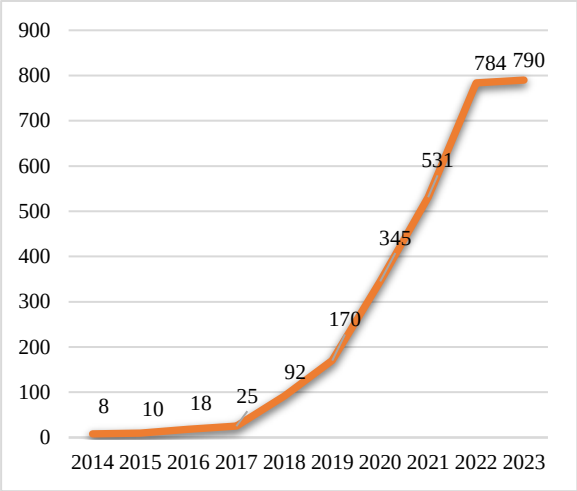

Figure 1. Last 10-Year Distribution of AI Related Articles in Healthcare (2014-2023)

When the published articles are analyzed in terms of countries, 14,195 authors from 106 countries contributed to the field. It was determined that most articles on artificial intelligence in health were written by researchers working in the United States (776), China (617), India (334), the United Kingdom (224), Saudi Arabia (182) and South Korea (158). Turkey ranks 16th with 57 articles (Figure 2 and Figure 3).

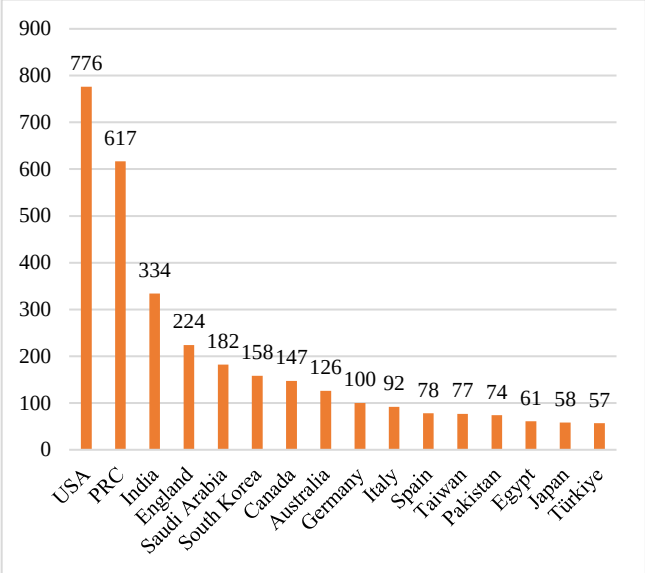

Figure 2. Distribution of Articles on AI in Healthcare by Countries (number of articles≥50)

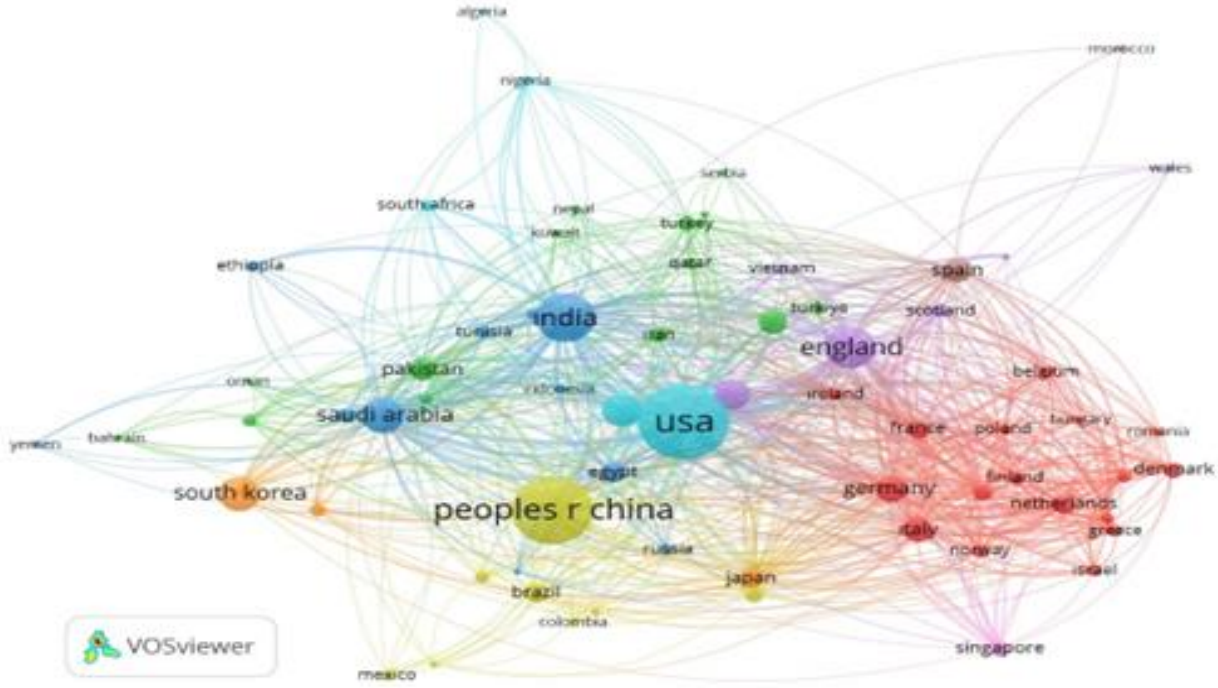

Figure 3. Number of Articles on AI in Health by Country (number of articles≥5)

Articles on the subject were published in 1084 journals. The journals that published the most articles were the Journal of Medical Internet Research (64), IEEE Access (59), Scientific Reports (57), Plos One (50), JMIR Medical Informatics (44) and Sensors (43) (Figure 4).

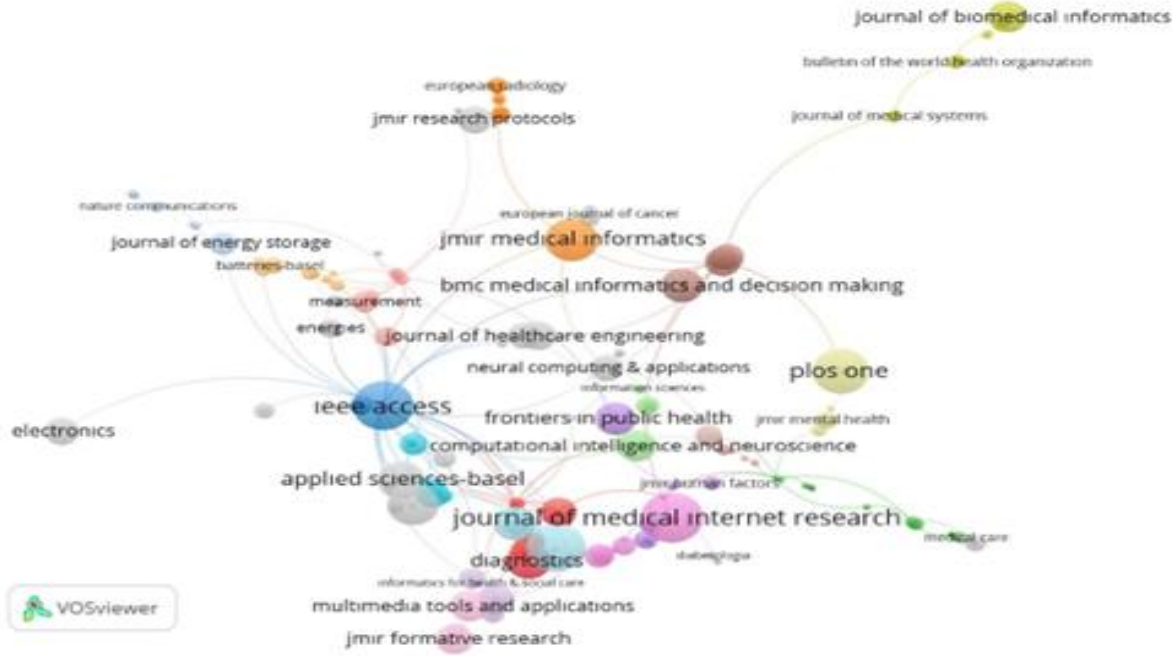

Figure 4. Number of Articles on AI in Healthcare by Journals (number of articles≥5)

Meng Ji (11), Tina Hernandez-Boussard (8), Kwang-sig Lee (8), Fei Wang (8) and Wenxiu Xie (8) wrote the most articles on artificial intelligence in healthcare (Table 2).

Table 2. Authors Who Published the Most Articles on AI in Health (n > 5)

	Auhor	Documents
1	Meng Ji	11
2	Tina Hernandez-Boussard	8
3	Kwang-sig Lee	8
4	Fei Wang	8
5	Wenxiu Xie	8
6	Tianyong Hao	7
7	Jie Xu	7
8	Ki Hoon Ahn	6
9	Chi-yin Chow	6
10	Aixia Guo	6
11	Deepak Gupta	6
12	Jong-myon Kim	6
13	Girish N. Nadkarni	6
14	Wentao Wang	6

Li (404), Shen (389), Li and Zha (382), Zhang (375) and Chen et al. (367) were the most cited authors on AI in healthcare (Table 3).

Table 3. Most Cited Authors on AI in Health (n ≥ 250)

	Author	Documents	Citations
1	W. Li	2	404
2	J. Shen	2	389
3	L. Li and Y. Zha	2	382
4	X. Zhang	2	375
5	Chen et al.	1	367
6	Brunese et al.	1	308
7	S. S. Gill	1	291
8	Arya et al.	1	275
9	Z. Allam and D. S. Jones	2	268
10	Nima et al., (23)	1	258
11	Mohsen et al.	1	257
12	A. Altan and S. Karasu	1	252

In the articles published on AI in health, 6,241 different keywords were used. Notably, the most commonly used keywords were machine learning (936), artificial intelligence (430), and deep learning (419), indicating the prevalence of these topics in the field. Other frequently used keywords included COVID-19 (105) and electronic health records (102) (Figure 5).

Figure 5. Most Used Keywords Content Analysis Results of the Most Cited Articles on AI in Healthcare

Fifty-five articles with 50 or more citations were analyzed regarding AI type, data used and research findings. The articles examined in terms of content were found to focus on themes related to "diagnosis of COVID-19 disease", "diagnosis of diseases", "detection and classification of cancerous cells", "identification of disease risk factors and disease prediction", "prediction of treatment outcomes", "prediction of disease course", "personalized treatment recommendations", "decision-making processes", "ethical issues, risks and responsibilities".

Using AI in the Diagnosis of COVID-19 Disease

Diagnosing the COVID-19 disease, which started in China and affected the whole world, was among the most critical health issues in 2019 and 2020. During this period, it was shown that COVID-19 disease can be diagnosed with AI using chest X-ray images (Almalki et al., 2021). It has been proven that DL (Altan and Karasu,2020; Brunese et al., 2020; Al-antari, et al., 2021; El et al., 2021; Karar et al., 2021; Dansana et al., 2023) and ML (Elaziz et al., 2020; Mohammed et al., 2020) can be used to diagnose COVID-19 disease from chest X-ray images. COVID-19 disease can be diagnosed by DL from CT images (Song et al., 2021), ML from plasma samples (Delafiori et al., 2020) and symptoms (Zoabi et al., 2021). In the research conducted by Wang et al. (2020), it was determined that the use of DL and ML together from chest X-ray images for the diagnosis of COVID-19 disease yielded more accurate results. Kwekha-Rashid et al. (2021) concluded that ML could be used to evaluate and classify COVID-19 cases.

Using AI to Diagnose Diseases

In addition to diagnosing COVID-19, DL and ML can diagnose different diseases. Lung and respiratory diseases can be diagnosed using DL from chest X-ray images (Brunese et al., 2020; Khan et al., 2020; Al-Ansari et al., 2021; Karar et al., 2021). Lauritsen et al. (2020a) showed that early diagnosis of sepsis from EHRs is possible with DL. Tuli et al. (2020) concluded that heart diseases could be diagnosed from data obtained from medical sensors with DL methods. Srivastava et al. (2021) proved that chronic obstructive pulmonary disease (COPD) can be diagnosed using medical respiratory sound data with DL methods. Kim et al. (2020) showed that DL methods can be used to diagnose mental illnesses from user content on social media. ML can be used to diagnose chronic kidney disease (Gin, 2020) and major depressive disorder (Nemesure et al., 2020) using EHRs. Javed et al. (2021) determined that cognitive disorders (Dementia) can be diagnosed with ML methods using data obtained from the Internet of Things.

Using AI in the Detection and Classification of Cancerous Cells

Research results show that cancerous cells can be detected and classified using DL. It is possible to detect and classify cervical cancer (Khamparia et al., 2020) and skin cancer (Khamparia et al., 2021) with the DL method. In the study conducted by Liu et al. (2020a), it was concluded that the DL method can detect and classify 7 different dental diseases.

Using AI to Identify and Predict Disease Risk Factors

Using EHRs, AI and ML are used to identify risk factors and predict diseases. With ML, it is possible to identify and predict risk factors for cardiovascular diseases (Ghosh et al., 2021), diabetes (Maniruzzaman et al., 2020), suicide risk (Gradus et al., 2020), heart disease (Ahmed et al., 2020), atrial fibrillation (Tiwari et al., 2020), Alzheimer's disease (Park et al., 2020) and acute critical illness (Lauritsen et al., 2021).

Use of AI in Predicting Treatment Outcomes

ML can accurately predict disease treatment outcomes (Bica et al., 2021). It has been used to predict treatment outcomes in psychiatry (Chekroud et al., 2021), oncology (Manz et al., 2020), endovascular (Brugnara et al., 2020), and COVID-19 (Vaid et al., 2021) diseases.

Using AI to Predict the Course of Disease

AI, ML, and DL play a crucial role in predicting the development, progression, spread, and course of diseases. In a study by Liu et al. (2020b), the DL method accurately predicted the future development of brain disease. ML can be used to predict biological and behavioral changes in individuals (Souri et al., 2020), the future incidence of Alzheimer's disease (Park et al., 2020), and the progression of diabetic kidney disease (Chan et al., 2021). Importantly, Allam et al. (2020) demonstrated that the spread of COVID-19 can be accurately predicted using AI, highlighting its potential in disease control.

Using AI in Personalized Treatment Recommendations

ML can be used to make personalized treatment recommendations to patients with depression and anxiety in psychiatry (Chekroud et al., 2021), online therapies (Chien et al., 2020), and generalizing EHRs (Bica et al., 2021).

Use of AI in Decision Making Processes

DL can be used to evaluate the patient's condition using patient data and to help clinicians in their decision-making processes (Chan et al., 2020). Alanazi (2020) showed that ML can provide authorities with comparative scenario recommendations to mitigate the continuous spread of COVID-19 disease successfully. Roma et al. (2020) used ML to predict the likelihood of individuals to comply with COVID-19 protective measures. Zhao et al. (2021) proved that ML can prevent the spread of false health information on social media.

Ethical Considerations, Risks and Responsibilities in the Use of AI in Healthcare Services

In addition to the many benefits of using AI, ML and DL in healthcare, there are concerns about ethical issues, risks and responsibilities. Hernandez-Boussard et al. (2020) state that reporting standards,

transparency, validity and reliability should be ensured when reporting medical AI. According to Murdoch (2021), using AI involves privacy and security risks related to health data. Jacobs et al. (2021) point out incorrect ML recommendations can negatively affect clinicians' treatment choices. Fletcher et al. (2021) suggests that three critical criteria (appropriateness, fairness and bias) should be followed when using ML and AI in healthcare. Markus et al. (2021) provide a roadmap for developing trusted AI systems in healthcare. Habli et al. (2020) consider that AI developers should also be responsible for patient harm caused by clinical AI used for decision-making.

Perceptions and Attitudes Towards the Use of AI in Healthcare Services

The three articles in the content analysis examine perceptions and attitudes towards using AI in healthcare services. According to Vellido (2020), to develop positive attitudes towards the use of AI in healthcare, the proactive involvement of medical professionals in the development and use of ML is necessary. Fan et al. (2020b) investigated the factors affecting healthcare professionals' adoption of an AI-based medical diagnosis support system. As a result, this research found that factors such as "performance expectation, ease of use, behavioral intention, social influence, trust in AI, personal innovativeness, task complexity, technology features, perceived substitution crisis" are influential in adopting AI. On the other hand, Abdullah and Fakieh (2020) concluded in their research that healthcare workers fear that AI technologies will replace employees and that there is a general lack of knowledge about AI.

4. DISCUSSION AND CONCLUSIONS

This study analyzed articles on using AI in healthcare services in the WOS database bibliometrically and content-wise. According to the findings obtained from the bibliometric analysis, it is seen that articles on the use of AI in healthcare services increased during and after the COVID-19 pandemic. In terms of productivity, it was determined that the most articles were published by "USA, China, and India" as countries, "Journal of Medical Internet Research, IEEE Access, Scientific Reports, Plos One" as journals, and "Meng Ji, Tina Hernandez-Boussard, Kwang-sig Lee, Fei Wang and Wenxiu Xie" as authors. When analyzed in terms of the effectiveness of the published articles, it is seen that authors such as "W. Li, J. Shen, L. Li and Y. Zha, X. Zhang, Chen et al. and Brunese et al." received the most citations. The most commonly used keywords in the related articles are "machine learning, artificial intelligence, deep learning, covid-19 and electronic health records". This bibliometric analysis highlights the ever-increasing use and significant impact of AI, ML, and DL in healthcare.

When the articles included in the scope of the research were examined in terms of content, it was found that AI, ML, and DL were used in "diagnosis of COVID-19 disease", "diagnosis of diseases", "detection and classification of cancerous cells", "determination of disease risk factors and disease prediction", "prediction of treatment results", "prediction of disease course", "personalized treatment recommendations", "decision-making processes", "ethical issues, risks, and responsibilities".

With the DL method using chest x-ray images of COVID-19 disease (Brunese et al., 2020; Altan and Karasu, 2020; Dansana et al., 2023; El Asnaoui and Chawki, 2021; Karar et al., 2021; Al-antari, et al., 2021) can be diagnosed. Elaziz et al. (2020) and Mohammed et al. (2020) proved that COVID-19 disease could be diagnosed by ML using chest X-ray images. Apart from COVID-19 disease, lung and respiratory diseases (Brunese et al., 2020; Khan et al., 2020; Al-antari et al., 2021; Karar et al., 2021), sepsis (Lauritsen et al., 2020a), heart diseases (Tuli et al., 2020), COPD (Srivastava et al., 2021), mental illness (Kim et al., 2020), major depressive disorder (Nemesure et al., 2020) and dementia (Javed et al., 2021). Research shows deep learning can detect and classify cancer cells (Khamparia et al., 2020; Khamparia et al., 2021).

ML is not only used to diagnose diseases but also to identify risk factors and predict diseases (Ahmed et al., 2020; Gradus et al., 2020; Maniruzzaman et al., 2020; Park et al., 2020; Tiwari et al., 2020; Ghosh et al., 2021), provide personalized treatment recommendations to patients (Chekroud et al., 2021; Chien et al., 2020; Bica et al., 2021), predicting treatment outcomes of diseases (Brugnaraet al., 2020; Manz et al., 2020; Bica et al., 2021; Chekroud et al., 2021; Vaid et al., 2021) and predicting disease course (Souri et al., 2020; Park et al., 2020; Chan et al., 2021). It is also possible to use DL to predict the future development of the disease (Liu et al., (2020b) and AI to predict the spread of epidemics (Allam et al., 2020). DL has been proposed as an aid to clinical decisions (Chan et al., 2020) and ML as an aid to managerial decisions (Alanazi, 2020; Roma et al., 2020; Zhao et al., 2021). However, in addition to the many benefits of using AI, ML, and DL in health, there are also concerns such as setting reporting standards, ensuring transparency, validity and reliability (Hernandez-Boussard et al., 2020), privacy and security risks related to health data (Murdoch, 2021), the effects of inaccurate, biased and erroneous recommendations of ML (Jacobs et al., (2021). Some studies (Fletcher et al., 2021; Markus et al., 2021; Habli et al., 2020) have tried to develop recommendations to address concerns about the use of AI in healthcare. However, more research is needed in this area.

Although scientific research articles on the use of AI, ML, and DL in healthcare have positive results, clinicians' expectations, attitudes and behaviors are as crucial as the system's success. In particular, healthcare professionals' fears, prejudices and lack of knowledge

about AI technologies may cause a decrease in the benefits to be obtained (Abdullah & Fakieh, 2020). Factors such as “performance expectation, ease of use, behavioral intention, social influence, trust in AI, personal innovativeness, task complexity, technology features, perceived substitution crisis” come to the fore in reducing the prejudices of healthcare professionals towards AI-based medical diagnosis support system and adoption (Fan et al., 2020b). In addition, to develop positive attitudes towards the use of AI in healthcare services, medical experts should be proactively involved in developing and using ML (Vellido, 2020). AI offers excellent potential in the delivery of healthcare services. However, realizing this potential requires careful consideration of ethical issues and positive attitudes and behaviors of healthcare professionals. The findings from this bibliometric and content analysis provide a foundation for future research and policy-making in the field of AI, ML, and DL in healthcare.

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No
Conflict of Interest:
The authors declared there is no conflict of interest
Ethical Approval:
The data used in the research are publicly available secondary data and ethics committee approval is not required.
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Examining The Institutions Preferred By University Students While Receiving Health Services

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ABSTRACT

In the provision of health services, preventive, curative, rehabilitative and health promotion services are provided within the scope of primary, secondary and tertiary treatment services in the public and private sectors. It is thought that the health institutions that individuals who want to receive health services apply to vary due to issues such as their social security, economic situation, time of receiving the service, desire to be protected from diseases, desire to heal from the disease, and distance to reach the institution. This study was conducted to determine which institution students studying in the field of health prefer when receiving health services and for what reasons, and to determine what influences the preferences of individuals who will work in this sector in the future. Within the scope of the research, a survey consisting of 21 questions included in the specialization thesis published by Aksoy (2018) was applied to associate degree students studying at the health services vocational school of a private university in Istanbul. The survey was shared via Google forms and filled out by 410 students. Classification scale was used within the framework of quantitative research method and the findings were organized using descriptive analysis and Chi Square analysis in SPSS 25 program. As a result of the analysis, it was determined that the most preferred institution was 'State Hospital (56.3%)', the reason for preference was 'Because It is Close/Easy to Access (39.2%)', the institution they would not prefer was 'Family Health Center (29%)' and the reason was 'Not being able to have every analysis done (24%)'. Within the scope of the findings, it is of great importance to conduct studies on making other health institutions attractive in order to alleviate the high demand for state hospitals.

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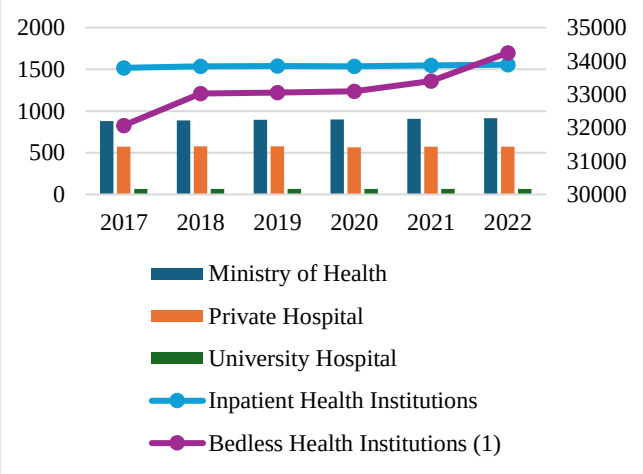
1.INTRODUCTION

Health services are activities that include processes such as protection from diseases and disease agents, supporting the recovery process after illness, and rehabilitation of physically and mentally disabled individuals. Healthcare institutions are complex and multidimensional organizational structures that provide health services to people with different socio-cultural and demographic characteristics. Health services are examined in four main groups as preventive health services, treatment services, rehabilitation services and health development services (Aksoy, 2018). In our country, within the scope of health services, preventive, developmental and curative health services are provided by public and private health institutions as primary, secondary and tertiary health services. In this context, when receiving health services, it is necessary to choose a hospital according to the sector and service type. Tengilimoğlu (2001) defines the concept of hospital selection as "the situation in which the health care consumer or caregiver chooses one of the health institutions when he/she has the opportunity to choose". In choosing a hospital, factors such as economic status, social security coverage, proximity of the institution, reliability, approach of the staff to the patient, not being crowded, not waiting in line, the institution's wide range of diagnostic and treatment options, being able to make an appointment whenever I want, being cheap, providing detailed information, and being recommended are effective (Tengilimlioğlu,2001, Ateş vd.,2004). The fact that resources are not unlimited and there are restrictions forces consumers to make choices (Hoşgör and Gündüz Hoşgör, 2019). In order for the individual who will apply for health services to be able to choose the health institution freely, they should not have to receive the service from a different institution due to any obstacle or should not give up receiving this service. It is very important to improve and develop the health system so that individuals who will receive health services do not encounter any problems.

When we look at the developments in the health system in Turkey, Bağ-Kur, Pension Fund and Social Security Institution, which covered different working groups with the General Health Insurance program in 2006, were brought together under one roof (OECD, 2008). In 2007, arrangements were made to ensure that primary health care services are provided free of charge to all citizens throughout the country, and the expenses of examination, examination-analysis, medicine, tooth extraction and prosthesis, glasses and emergency treatment in outpatient treatments of green card holders were included in the scope of payment. In 2008, regulations were made to ensure that everyone can benefit from all kinds of health assistance free of charge in cases of epidemics, work accidents, occupational diseases and emergencies, without questioning their insurance. Subsequently, the Family Medicine system was introduced in 2010, and in 2013, 17 comprehensive city hospital projects were prepared in different regions (Karaboğa vd., 2023). There are four city hospitals serving in Istanbul (General Directorate of Public Hospitals, Our City Hospitals,2024). Today, developments in the health system continue, and efforts are being made to produce solutions that will facilitate individuals' access to health services.

Graphic 1. Health institutions information between 2017-2022



(1)Health Centres, Family Medicine Units, Health Houses, Tuberculosis Dispensaries, Child, Adolescent, Women and Reproductive Health (ÇEKÜS) Units (AÇSAP Centres), Cancer Early Diagnosis, Screening and Training Centres, Private Polyclinics, Private Medical Centres are included in the total. For the pre-2000 period, healthy data suitable for the definition could not be obtained. With the 'Regulation on Community Health Centres and Affiliated Units' published on 25/05/2018, the name of the Mother and Child Health and Family Planning (AÇSAP) Centre was changed to Child, Adolescent, Women and Reproductive Health (ÇEKÜS) Unit.

Source: Turkish Statistical Institute (TUIK), Health and Social Protection, 2024

When the number of health institutions in our country is examined within the framework of the Turkish Statistical Institute data, it is seen that the number of health institutions affiliated with the Ministry of Health increased from 879 to 915 between 2017 and 2022, according to the data in Graphic 1. No significant increase was observed in the number of private and university hospitals. The number of health institutions with beds increased from 1,518 to 1,555, and the number of health institutions without beds increased from 32,069 to 34,240. When evaluated specifically for Istanbul, it was determined that there were a total of 234 health institutions in 2022; 54 of them were hospitals affiliated with the Ministry of Health, 16 were university hospitals and 164 were private hospitals (TUIK, Health and Social Protection, 2024).

Table 1. Number of physicians between 2017-2022

Yıl	2017	2018	2019	2020	2021	2022
Number of Physicians	149.997	153.128	160.810	171.259	183.569	194.688
Total Number of Applications per Physician	4793	5110	5055	3505	3681	4388
Total Number of Physicians per Thousand People	539	539	517	488	461	438

Source: TUIK, Health and Social Protection, 2024

When Table 1 is examined, it is seen that the number of physicians increased by 44,691 people between 2017 and 2022. While the number of physicians per thousand people was 539 in 2017, this number decreased to 438 in 2022. According to the data in the Health Statistics Yearbook published in 2022, while the population per family medicine unit in Turkey is 3,072, this number is stated to be 3,187 in Istanbul (Republic of Turkey Ministry of Health, Health Statistics Yearbook, 2022).

The development in health service with the studies carried out in our country is determined with the data in Graph 1 and Table 1. In addition to this improvement, situations such as increasing population, economic processes, disease diversity are important factors affecting the increase in the demand for services from health institutions. There are many people who cannot get service from the institution they want for various reasons It is thought that the institution that an individual who wants to receive health services first chooses, the institution that he/she avoids choosing, or the path he/she follows in cases where he/she wants to choose but does not have the means to do so, will be an important guide in the development of health services.Within the scope of this subject, a literature review was conducted on what is effective in hospital selection and relevant studies were examined. In the study conducted by Doghaither et al. (2002), male participants, participants with high income and education levels, young participants and participants working in the private sector preferred private hospitals. In the study conducted by Aydın (2003), when the factors affecting the preferences of patients receiving service from private, state and university hospitals were investigated, it was determined that the most important factor affecting hospital preference was social security, diagnosis and examination opportunities and the location of the hospital were other important factors affecting patient preference, appointment, price and recommendation factors were effective in state hospital preferences, the fact that the doctor and other employees were caring about the patient, the patient knowing the doctor were effective in private hospital preferences, and young individuals, those with high income levels, those with high education levels and those working in the private sector preferred private hospitals. In the study of Akıncı et al. (2004), it was determined that the most important factor affecting hospital preference is proximity, technological competence, physical appearance and condition of the hospital's facilities, image and reputation of the hospital, and the scope of health insurance. In the study conducted by Ayhan and Canöz (2006), it was determined that the most important factor affecting the choice of hospital was the image of the hospital, and that the hospital had an agreement with the institution it worked for, recommendations from acquaintances, and the prestige of the hospital in the society were also effective in the choice. It was observed that as the level of education of the participants increased, the preference for private hospitals increased. Among the problems that the participants encountered in the hospital in the study, it was seen that the bureaucratic procedures were many and complicated, the hospital was crowded, appointments were given to later dates, and the number of staff was insufficient. In the study of Asığbulmuş (2016), it was determined that the first three factors that are effective in hospital choice are trust, specialist doctor and satisfaction, that the satisfaction factor is even more important than the price factor in hospital choice, that the most frequently used health institutions are public hospitals, private hospitals, university and family medicine, and that the problems encountered are related to practices and prices. In the study of Ataman and Kurşunluoğlu Yarımoğlu (2018), it was determined that the most important factor affecting the hospital preference is that the doctors who are health service providers are experts in their fields and their experience is important, those who prefer private hospitals give importance to the cleanliness factor, those who prefer public hospitals prefer them because the work progresses quickly, the familiarity factor comes to the fore in the preference of public hospitals, and the participants prefer hospitals that are close to their place of residence. In the study of Yetim and Çelik (2021), it was determined that the preferred hospitals were state hospitals, private hospitals and university hospitals, respectively, and the most important factors affecting hospital preference were proximity, satisfaction, necessity and acquaintance, while proximity and necessity factors were especially prominent in the preference of state hospitals.

In the light of the findings obtained within the scope of the literature review, this research was prepared to determine which institution university students prefer

when receiving health services and the reasons for their preference.

2. MATERIALS AND METHODS

This study was planned to determine what university students pay attention to when choosing a health institution. In literature, the process has generally been examined from the public's perspective, and this study focused on university students in order to evaluate the process from a different perspective. The universe of our study, which is a cross-sectional and descriptive research, consists of university students. The sample group, determined by the purposive sampling selection technique, consists of students studying at the health services vocational school of a private university in Istanbul.

In the study, a questionnaire consisting of 21 questions in the specialization thesis published by Aksoy (2018) was used. The survey was shared with students via Google forms and filled out by 410 students. Classification scale was used within the framework of quantitative research method and the findings were organized using descriptive analysis and Chi Square analysis in SPSS 25 program. The Ethics Committee decision numbered E-53938333-050-15782 was taken for the study on 28.06.2022.

3. RESULTS

The data obtained in the study were analyzed and the results were tabulated.

Table 2. Distribution of some descriptive characteristics of the students participating in the research

Class	**N**	**%**
1st Class	271	66
2 st Class	139	34
Total	410	100
Who do you live with in your home?	**N**	**%**
Family	292	71
Alone	16	4
Digs	65	16
Other	12	3
Friend	25	6
Total	410	100
Income Type	**N**	**%**
Family	303	74
I am working	57	14
Studentship	48	12
Other	2	1
Total	410	100
Chronic Disease	N	**%**
Woman	74	18
Man	14	3
Not Having Chronic Disease	322	79
Total	410	100
Chronic Disease Type	**N**	**%**
Neurological Diseases	2	1
Chest Diseases	16	4
Stomach Diseases	28	7
Blood Diseases	13	3
Heart Diseases	8	2
Other (Kidney, Lung, Rheumatism, etc.)	18	4
I do not have a chronic disease	325	79
Total	410	100
Continuously Used Medicine	**N**	**%**
Yes	57	14
No	353	86
Total	410	100
First preferred health institutions by gender	**N**	**%**
Woman	Public Hospital	170	56
	Family Health Center	72	24
	Private Hospital	34	11
	Training and Research Hospital	21	7
	University Hospital	3	1
	Special Inspection	0	0
	Pharmacy	1	0
	Total	301	100
Man	Public Hospital	61	56
	Family Health Center	15	14
	Private Hospital	21	19
	Training and Research Hospital	5	5
	University Hospital	3	3
	Special Inspection	3	3
	Pharmacy	1	1
	Total	109	100

Information on the demographic characteristics, health institution preferences and health status of the students participating in the study are presented in Table 2. When Table 2 is examined, it is seen that 66% of the participants are first-year students. It was determined that 71% of the participants live with their families, and 74% of their income is covered by their families. It was determined that 21% of the participants had a chronic disease; this rate consisted of 18% female and 3% male participants. When the types of chronic diseases were analyzed, it was observed that the highest rate was in stomach diseases with 7%. The rate of participants who use medication regularly was determined as 14%. When asked about the first institution they applied to when they needed health services, it was seen that 56% of female participants preferred a state hospital, 24% preferred a family health center, and 11% preferred a private hospital. Among male participants, it was determined that 56% preferred public hospitals, 19% preferred private hospitals and 14% preferred family health centers.

Table 3. First preferred health institutions according to monthly income

Monthly Income	N	Public Hospital		Family Health Center		Training and Research Hospital		University Hospital		Private Hospital		Special Inspection		Pharmacy		Test Statistics
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	P
Under 1500 TL	149	95	41	36	41	9	35	1	17	8	15	0	0	0	0	p<.05
Between 1500-3000 TL	82	49	21	10	12	6	23	4	66	11	19	1	33	1	50	
Between 3000-5000 TL	98	45	20	28	32	5	19	1	17	18	33	1	33	0	0	
Over 5000 TL	81	42	18	13	15	6	23	0	0	18	33	1	33	1	50	
Total	410	231	100	87	100	26	100	6	100	55	100	3	100	2	100	

Pearson Chi-Square-Asymptotic Significance (2-sided)- p<.05
When Table 3 is examined, it is seen that there are differences according to income group in the responses given to the question "Please indicate the first health institution you would prefer to go to in case of illness or discomfort"(p<.05). It has been determined that as the income level increases, the number of applications to private hospitals and clinics increases, while the number of applications to public institutions decreases.

Table 4. Participants' reasons for preferring or not preferring health institutions

In case of a disease or illness, please specify the health institution you would prefer to go to first.			In case of a disease or illness, please state your reason for choosing the health institution you prefer to go to first (you can select more than one option).	Which health institution would you definitely not consider applying to in case of illness/disorder? (You can tick more than one option).		Please state your reason for not applying to this institution, which you would definitely not consider applying to in case of illness/illness. (You can tick more than one option).
Institutions	**Number of Preferred**	**Percentage of Preferred**	**Reasons for Preference (p<.05)**	**Number of Those Who Do Not Prefer**	**Percentage Not Preferred**	**Reasons for Not Preferring (p<.05)**
Family Health Center	87	21	• Due to social security, • Because it is close/easy to reach • Because their approach to the patient is good	118	29	• Inability to print the desired prescription • Being too crowded • Waiting time is too long
Public Hospital	231	56	• Due to social security, • Because it's cheap, • Because it is close/easy to reach	71	17	• Insufficient institutional equipment

			• Because their approach to the patient is good • The institution has a wide range of diagnostic and treatment opportunities, • To be examined by a specialist doctor, • Because the organization's employees are more enlightening, • Since detailed research has been done, • Because it is recommended.			
Training and Research Hospital	26	6	• The institution has a wide range of diagnostic and treatment opportunities, • To be examined by a specialist doctor	26	6	• Health Personnel Are Indifferent • Does Not Give A Feeling Of Confidence • Too crowded • Paperwork is Tiring
University Hospital	6	2	• Because the organization's employees are more enlightening, • Since detailed research has been done.	144	35	• Health Personnel Are Indifferent • Does Not Give A Feeling Of Confidence • I cannot make an appointment for the date I want • Inability to print the desired prescription • Paperwork is Tiring
Private Hospital	55	13	• Because their approach to the patient is good • Because I wasn't kept waiting, • Because the institution is clean, • The institution has a wide range of diagnostic and treatment opportunities,	38	9	• I cannot have every test done • I cannot make an appointment for the date I want

						• Because it's not crowded, • Because I can make an appointment whenever I want, • Because the organization's employees are more enlightening.										
Special Inspection	3		1			• Because I wasn't kept waiting, • To go to the same doctor	95		23		-					
Pharmacy	1		,5			• Because it is close/easy to reach	17		4		-					
Other	1		,5			-										
Total	410		100			-										
Total	410	231	100	87	100	26	100	6	100	55	100	3	100	2	100	

Pearson Chi-Square-Asymptotic Significance (2-sided)- **p<.05**

When Table 4 is examined, findings regarding why hospitals that are and are not the first choice for any health problem are not preferred can be seen. 56% of the participants stated that the State Hospital is the institution they would first prefer in case of any health problem. Participants prefer the State Hospital because it provides social security, is economical (cheap), transportation is easy, the approach to the patient is good, it offers extensive diagnosis and treatment opportunities, it provides the opportunity to be examined by a specialist doctor, and the staff provides enlightening information and is recommended. Participants who did not prefer the State Hospital (17%) stated that they did not prefer this institution due to insufficient institutional equipment (p<.05).

Table 5. The last healthcare institution where the participants received healthcare services

Where did you last apply for health care?	**The Number of Applicants**	**Percentage of Applicants**
Family Health Center	67	16
Public Hospital	218	53
Training and Research Hospital	28	7
Private Hospital	59	14
University Hospital	6	2
Special Inspection	20	5
Pharmacy	12	3
Total	410	100
For what reason did you apply for health care before this application?	**The Number of Applicants**	**Percentage of Applicants**
(You can tick more than one option).		
For My New Complaint	190	46
Chronic Disease Control	25	6
To Prescribe Medicine	83	20
Due to Emergency/Accidents	32	8
Due to pregnancy status	0	0
Oral Health	39	9
Due to Surgery	10	2
For Children's Vaccinations	1	,2
To Get Information About My Disease	65	16
Other	13	3
Are there times when you need health care but do not apply?	**The number of participants**	**Percentage of Participants**
Yes	315	77
No, I Always Apply	95	23
Total	410	100
State your reason for not seeking health care. (You can tick more than one option)	**The number of participants**	**Percentage of Participants**
Ignoring the Disease	118	29
Inability to Access Health Care	118	29

Self-Medication	111	27
No Time	69	17
Because I Don't Want To Wait	89	23
My Financial Situation Is Not Sufficient	49	12
The Hospital Environment Annoys Me	46	11
I am applying	2	1
Other	12	3

When Table 5 is examined, findings regarding the participants' last preferred health institution and reasons for applying, as well as the reasons for not applying despite needing health services, are included. It was observed that the institution where the majority of the participants last received health care was the State Hospital with 53% and 46% of these applications were made due to a new disease. 77% of the participants stated that they did not seek healthcare services even though they needed them. The most common reasons for not applying include ignoring the disease (29%), lack of access to health services (29%) and self-medicating (27%).

Table 6. Participants' thoughts about healthcare services

Which of the following definitions defines "health services" in your opinion? (You can select more than one option).		
Definitions	**The number of participants**	**Percentage of Participants**
Being able to reach a doctor whenever I need it.	173	42
It is the service of institutions that I can apply for my urgent health needs.	166	41
It is a service that I do not use unless I have to.	56	14
It is the protection of the health of individuals, families and communities.	139	34
It is a service that I use with confidence.	119	29
It is a service provided only by the state.	22	5
It is the treatment of those who are sick.	220	54
Other	1	1
'Health promotion is the process by which people increase control over and ensure their health'. According to this definition of the World Health Organization, what can you do to improve your health? (You can tick more than one option).		
Things That Can Be Done to Improve Health	**The number of participants**	**Percentage of Participants**
Eating Healthy	324	79
Exercising Regularly	277	68
Reading Regular Health Bulletins	71	17
Treatment Control Regarding My Current Diseases	222	54
Attending Health-Related Meetings	66	16
Paying Tax Regularly	23	6
Environment That Threatens Public Health	127	31
Food and Nutrition	152	37
Planning My Economic Situation	77	19
Health Promotion	66	16
In your opinion, what are the three most important elements in healthcare delivery? Please tick the 3 statements below that are most important to you.		
Elements in Health Presentation	**The number of participants**	**Percentage of Participants**
I Should Be Able to Easily Receive Health Care Whenever I Need It	184	45
I Should Be Able to Apply to All Health Institutions I Want	34	8
All Health Services Should Be Free	90	22
I should be able to make an appointment with the doctor I want, at the time I want.	46	11
I Should Not Wait in Line at Health Institutions	38	9
Everyone Should Not Go to Every Hospital Who Wants, There Should Be a Referral Chain	18	5
Total	410	100

When Table 6 is examined, the participants' definition of health care, their ideas about what to do to improve their health status, and their evaluations of the three important elements in health care delivery are seen. When participants were asked to define health services, the most preferred definitions were " Being able to reach a doctor whenever I need it." (42%) and " It is the service of institutions that I can apply for my urgent health needs" (41%). When asked what could be done to improve health, participants responded by saying healthy eating (79%), regular exercise (68%), and checking treatment for existing diseases (54%). When asked about the three important factors in healthcare, the most preferred statements were "I should be able to easily get healthcare whenever I need it" (45%), "All healthcare services should be free" (22%) and "I should be able to make an appointment with the doctor I want at the time I want" (11%).

4. DISCUSSION

When the participants were asked about the first institution they applied to when they needed health services, it was found that the highest preference was given to State hospitals (56%). Similarly, various studies in the literature show that individuals generally choose State Hospitals as their first choice when receiving health services. For example, in their studies conducted by Baykan et al. (2001) in the Gölbaşı district of Ankara province, Mayda et al. (2003) in the Düzce province, and the Southeastern Anatolia Project Regional Development Department (2003) in the GAP region, they determined that the first place patients applied to was generally state hospitals. However, in studies conducted by Şenol et al. (2002) in Antalya and by Akıllı and Genç (2007), it was observed that individuals can change their preferences depending on economic and transportation opportunities and turn to private doctors or private hospitals. These findings reveal that state hospitals are widely preferred in accessing health services, but private health institutions are also an important option when opportunities allow. Participants stated the following factors as reasons for choosing the State Hospital: valid social security, being economical (cheap), easy transportation, good approach to the patient, offering extensive diagnosis and treatment options, the opportunity to be examined by a specialist, and the staff providing enlightening information and being recommended. Various studies have shown that the most important factors in individuals' hospital selection include social security, accessibility, quality of health services and expertise of doctors. For example, Tengilimoğlu (2001) stated that the proximity of the health institution and the presence of sufficient specialists in hospitals are effective in diseases that require specialization. Erdem (2007) and Çiftçi (2010) emphasized that the attitudes and behaviors of doctors and staff as well as the hygiene and cleanliness of the hospital are important in choosing a hospital. Özkoç (2013) and Işık et al. (2013) revealed that transportation facilities and hospital cleanliness are the determining factors. Doering and Maarse (2014) and Aksoy (2018) found that factors such as distance to the hospital, previous treatment experiences and social security are important in hospital preferences. Finally, Hoşgör and Gündüz Hoşgör (2019) and Korkutan (2021) similarly determined that factors such as distance, recommendation, price and health insurance are effective in hospital selection. These results reveal that, in general, individuals consider both financial advantages and the quality and accessibility of health services when choosing a hospital.

It is noteworthy that the last institution where the majority of the participants received health services was the State Hospital and that these applications were generally made due to a new illness. However, a large portion of the participants stated that they did not seek medical care even though they needed it. The reasons for this include factors such as ignoring the disease, limited access to healthcare, and self-medication. In the study conducted by Ateş et al. (2004), it was determined that 58.2% of those who could not benefit from health services did so because they did not care about the disease. In Aksoy's (2018) study, approximately three-quarters of the participants answered "yes" to the question "Are there times when you need health services but do not seek them?". Among the reasons for this situation, ignoring the disease and preferring self-treatment methods come to the fore. Disregarding the disease indicates that individuals have low health literacy and do not sufficiently understand the importance of early diagnosis. Limited access to health services poses a serious obstacle, especially for individuals living in rural areas. Also, the tendency to self-medicate, leading to inappropriate treatment methods and health can cause their problems to worsen. To prevent these situations, health education and access opportunities need to be increased.

When participants were asked to define health services, the most preferred definitions were "I can reach a doctor whenever I need" and "It is the service of institutions that I can apply for my urgent health needs." In the study conducted by Aksoy (2018), when the answers to the questions asked to define health services were examined, it was seen that the three most preferred answers were "To be able to reach a doctor whenever I need it", "To treat the sick and to ensure that those treated can continue the rest of their lives in a healthy way" and "The services of the institutions that I can apply for in my urgent health needs". These results reveal how important it is for participants to have access to health services and to receive help in emergencies, and also show that health services play a critical role in individuals' ability to maintain their quality of life and feel health security.

When asked what could be done to improve health, participants made suggestions such as eating healthy, exercising regularly, and treating and controlling existing diseases. When asked about the three most important factors in healthcare, participants preferred being able to easily receive healthcare whenever they needed it most, having all healthcare services free of charge, and being able to make an appointment with the doctor of their choice at the time they wanted. In the Aksoy (2018) study, the most frequently preferred answers to the question asked to the participants about what can be done to promote and improve health were "eating healthy", "doing regular sports", "not neglecting the treatment and check-ups related to existing diseases" and "reporting the food and nutrition-related factors that threaten the health of the society". In addition, as a result of comparing the answers given to the question about health promotion and development with the education level, it was determined that as the education level increases, answers such as "doing regular sports", "reading regular health bulletins", "not neglecting the treatment and check-ups related to existing diseases", "reporting environmental problems that threaten the health of the community", "reporting food and nutrition-related elements that threaten the health of the community" and "planning the economic situation and allocating a budget for being healthy" are preferred with higher statistical significance. These findings show that as the level of education increases, individuals' awareness and active participation in protecting and improving their health increases (Aksoy, 2018).

5. CONCLUSIONS

When choosing health institutions, it has been seen in both previous studies and this study that cost and transportation are the primary factors. However, the problems that individuals who apply to health institutions frequently encounter include long waiting times, not being able to perform the requested tests, not being able to make an appointment at the desired times, and not being able to have the necessary medications prescribed. These problems have existed in our health system for many years. Improvements made for these chronic problems studies are inadequate has also been revealed in this study. The short duration of reports, the fact that medicines with reports can only be prescribed by specialist physicians, the fact that family physicians cannot prescribe all medicines and the fact that not all kinds of tests can be performed in family health centres are among the main reasons for the overcrowding in health institutions. It is thought that the arrangements to be made for these simple problems will significantly reduce the density in health institutions. For example, renewing the reports of patients using prescription drugs due to chronic diseases and requiring specialist physicians to see patients on certain dates and allowing them to buy these drugs directly from pharmacies or authorizing their family physicians to prescribe them would be an important step. The pharmacy or the family doctor will be able to keep the process under control within the framework of the specialists' notes.

Within the framework of current regulations, the inability to perform simple tests such as vitamins in family health centers puts unnecessary burden on state hospitals. In order to perform such simple tests, individuals should be given the right to have these tests done at family health centers at most twice a year and these tests should be performed with the approval of a physician, which will reduce the density in state hospitals. However, when making such referrals, the need for adequate equipment and personnel in family health centres should not be ignored. In Istanbul, a metropolitan city, it is of great importance to increase the number of physicians and improve the service opportunities provided in the institution due to the dense population. In addition, the public needs to be informed about the use of health services. In general, patients' disregard for their illness or their attempts to manage the process with home medications may necessitate referral to secondary or tertiary healthcare services in advanced stages. In order to prevent this situation, it is thought that seminars and training programs organized in schools will be useful.

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Workplace Violence Against Healthcare Workers in Türkiye: Experiences, Opinions, and Suggestions

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ABSTRACT

Workplace violence against healthcare workers is a complex issue with significant implications for the safety and wellbeing of professionals in the healthcare sector. Drawing on data from 136 participants across Türkiye, this study explores the prevalence, forms, impacts, and management strategies of workplace violence in different healthcare settings. The demographic characteristics of the participants reveal a diverse composition of healthcare workers affected by workplace violence, highlighting the universal nature of the issue. Verbal abuse emerges as a predominant form of violence, ranging from insults and threats to humiliation, while instances of physical violence pose grave risks to healthcare professionals. The study shows the inadequacy of support systems within healthcare institutions and the legal system, exacerbating the distress experienced by healthcare workers. Strategies for managing workplace violence include internal coping mechanisms, peer support, and institutional intervention, emphasizing the need for comprehensive training programs and enhanced institutional protocols. Recommendations for prevention encompass a multifaceted approach involving enhanced security measures, support systems, and policy reforms at various levels. The study concludes with a call to action for concerted efforts to address workplace violence against healthcare workers in Türkiye, emphasizing the importance of targeted interventions to ensure the safety and wellbeing of professionals in their workplace. These findings also provide valuable insights into the complexities of workplace violence in healthcare settings and highlight the urgent need for action to address this pressing issue.

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1.INTRODUCTION

On October 4, 2023, a 15-year-old high school student, BC (initials only hereafter), visited the primary care unit in Kars, Türkiye, seeking a sick note. The attending physician, EŞ, declined the request, prompting the patient to share the incident with his brother, SC. Subsequently, the patient and his brother, BC and SC, confronted the physician at the primary care unit and physically attacked him. The assaulted physician suffered a heart attack while receiving treatment at the state hospital. Later, both siblings were arrested, and the elder brother SC received a prison sentence (Oktay, 2023).

The alarming escalation of workplace violence against healthcare providers, exemplified by several tragic incidents such as the assault described above, highlights a pressing concern within the Turkish healthcare landscape. To provide answers and solutions for this concern, mumerous studies have shed light on the extent of workplace violence against healthcare workers in Türkiye. A good illustration of this is the study by Pınar et al. (2017). The study revealed that nearly half of the healthcare workers in their sample had experienced violence at work in 2012, with over half encountering at least one form of violence in their careers. The other critical pieces of evidence supporting this issue comes from the official reports published by the Turkish Ministry of Health. These reports reveal a sharp increase in incidents of violence in healthcare settings, particularly through the documented use of *Beyaz Kod* —a specialized hospital emergency code designed to notify security personnel about violent situations. In 2021 alone, there were 101,984 *Beyaz Kod* cases reported, which marks a dramatic rise compared to the 46,274 cases recorded in 2019 (Bianet, 2022). Similar to this, the report by the Ministry's annual report for 2021 shows that there were 27,560 instances of workplace violence, which included threats, physical assaults, and other forms of aggression (see Bianet, 2022 for a detailed discussion of workplace violence against Turkish healthcare workers). Finding its interest in providing another perspective for the prevalence of workplace violence, this paper aims to explore the intricate dynamics of this issue by examining the perspectives of healthcare workers across various healthcare settings in Türkiye.

Workplace violence is a complex phenomenon characterized by violent acts directed towards individuals at work or on duty. International Labor Office defines workplace violence as "incidents where staff are abused, threatened, or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being, or health" (International Labor Office, 2002, p.3). Such acts can range from verbal abuse and intimidation to physical assault and even homicide (Arbury et al., 2017, p. 266). Healthcare settings, including hospitals and primary care units, are particularly vulnerable to workplace violence, with nearly half of non-fatal workplace violence cases occurring within these environments (Caruso et al., 2022, p. 912). In the United States alone, approximately 75% of workplace assaults between 2011 and 2013 took place in healthcare settings (Phillips, 2016, p. 1661). In addition, healthcare workers face a significantly elevated risk of violence compared to those in other fields, with reported incidents occurring at a rate sixteen times higher than in other industries (International Labor Office, 2002, p.3). However, the true prevalence of workplace violence in healthcare remains elusive due to underreporting, data inconsistencies, and a lack of consensus on definitions. As a result, it is estimated that reported cases may be as much as three times lower than actual figures, with only a fraction of violent incidents being formally reported (Pompeii et al., 2013; Rosenman et al., 2006, p. 361).

The Turkish healthcare system, like many others globally, confronts the escalating issue of workplace violence against healthcare providers. Ayrancı et al. (2006), for instance, found that nearly half of healthcare professionals in western Türkiye encountered either verbal or physical violence at some point in their careers. Similarly, Bıçkıcı (2013) reported that 55% of healthcare providers in a state hospital in Ankara experienced incidents of verbal or physical violence in 2002. Building on this, Er et al. (2020) argued that a significant majority, approximately 61.1%, of healthcare workers in Zonguldak were exposed to workplace violence at least once throughout their professional lives. Furthermore, Demiroğlu et al. (2015) conducted a study involving 252 healthcare providers in Kilis, indicating that around three-quarters of healthcare workers in Türkiye could expect to encounter some form of violence during their careers.

Smaller-scale studies conducted across various regions of Türkiye consistently demonstrate the pervasive nature of workplace violence against healthcare providers. These studies highlight the prevalence of verbal and physical violence experienced by healthcare workers and shed light on the specific forms of violence encountered in healthcare settings. The research conducted by Çevik et al. (2020), for example, revealed that verbal abuse was the predominant form of workplace violence, constituting 77.2% of reported incidents, followed by physical violence at 11.7%. Similarly, Demiroğlu et al. (2015) documented various forms of workplace violence, with verbal incidents comprising 41%, verbal abuse at 39%, physical threats at 17%, and sexual abuse at 3%. Exploring the specific departments, Esen and Uysal (2020), through their analysis of 199 *Beyaz Kod* records from January 2019 to October 2020, identified emergency departments

(44%) and outpatient clinics (49.1%) as the primary settings for workplace violence.

In a comprehensive study involving 433 physicians in Edirne, Erten et al. (2019) highlighted that violence at work was predominantly initiated by patient relatives (50%), with patients and their relatives jointly contributing in 41% of cases. Despite the prevalence of workplace violence, the study by Er et al. (2020) reported that a substantial 83.5% of healthcare providers who experienced such incidents refrained from taking legal actions. This hesitancy was attributed to the widespread belief (74.6%) among these providers that pursuing legal measures would yield no practical consequences. This multifaceted exploration of workplace violence underscores the urgent need for targeted interventions, emphasizing the role of patient-family dynamics and the prevailing perception among healthcare providers regarding legal remedies and their efficacy in addressing such incidents.

Tragic incidents, such as the assault described at the beginning of this paper, emphasize the urgent need for comprehensive exploration and intervention to address workplace violence in the Turkish healthcare system. A pivotal turning point that spurred comprehensive initiatives to address workplace violence was the tragic murder of cardiac surgeon, EA, in Gaziantep (Zeren, 2023). This incident, marked by its profound impact, is not an isolated occurrence. Rather, it is emblematic of a broader pattern of violence against healthcare professionals. Another distressing incident unfolded on May 29, 2015, when surgeon, KF, was subjected to a targeted attack, being shot three times by a patient within the hospital corridor in Samsun ("Görevi başında öldürülen", 2023). This alarming trend continued on March 29, 2017, when a retired policeman held physician, HA, accountable for his wife's discharge, resorting to violence by shooting him in the abdomen within the confines of his office at a state clinic in Aksaray ("Doktoru öldürüp intihar eden", 2017). Tragically, on July 6, 2022, another incident unfolded, highlighting the vulnerability of healthcare professionals. In this case, a patient's relative shot EK, a dedicated cardiologist working in a state hospital in Konya ("Doktor Ekrem Karakaya'nın", 2022). This distressing list, documented by Diken (2023), presents a comprehensive overview of the disturbing frequency of murders occurring in healthcare settings in Türkiye. It highlights the urgent need for a systematic and thorough exploration of the root causes and dynamics contributing to such incidents, with a view to formulating effective preventive measures and interventions. These incidents serve as sobering reminders of the risks faced by healthcare providers in the line of duty and underscore the importance of implementing effective strategies to mitigate these risks and ensure the safety and well-being of healthcare workers.

Given the serious challenges and the increasing prevalence of workplace violence in healthcare settings, this study seeks to provide a deeper understanding of the issue by exploring the perspectives and lived experiences of healthcare workers in Türkiye. By examining the problem through the lens of those who are most directly impacted—doctors, nurses, and other healthcare professionals—this research will offer valuable insights into the root causes, triggers, and patterns of violence that occur within medical environments. Furthermore, the study aims to shed light on the psychological, emotional, and professional toll that such violence takes on healthcare workers, affecting not only their wellbeing but also the quality of care they can provide to patients. By capturing these complex dynamics, the research seeks to contribute to the broader discourse on workplace safety in healthcare and to underscore the urgent need for effective solutions.

Ultimately, the goal of this study is to inform the development of evidence-based interventions and policies that are specifically designed to prevent workplace violence, protect healthcare workers, and create safer, more supportive work environments (see Icbay, 2024). This includes identifying key areas for policy reform, proposing strategies for conflict de-escalation, and emphasizing the importance of institutional support for those affected by workplace violence. In doing so, the research aims to serve as a foundation for actionable change, benefiting both healthcare providers and the healthcare system as a whole.

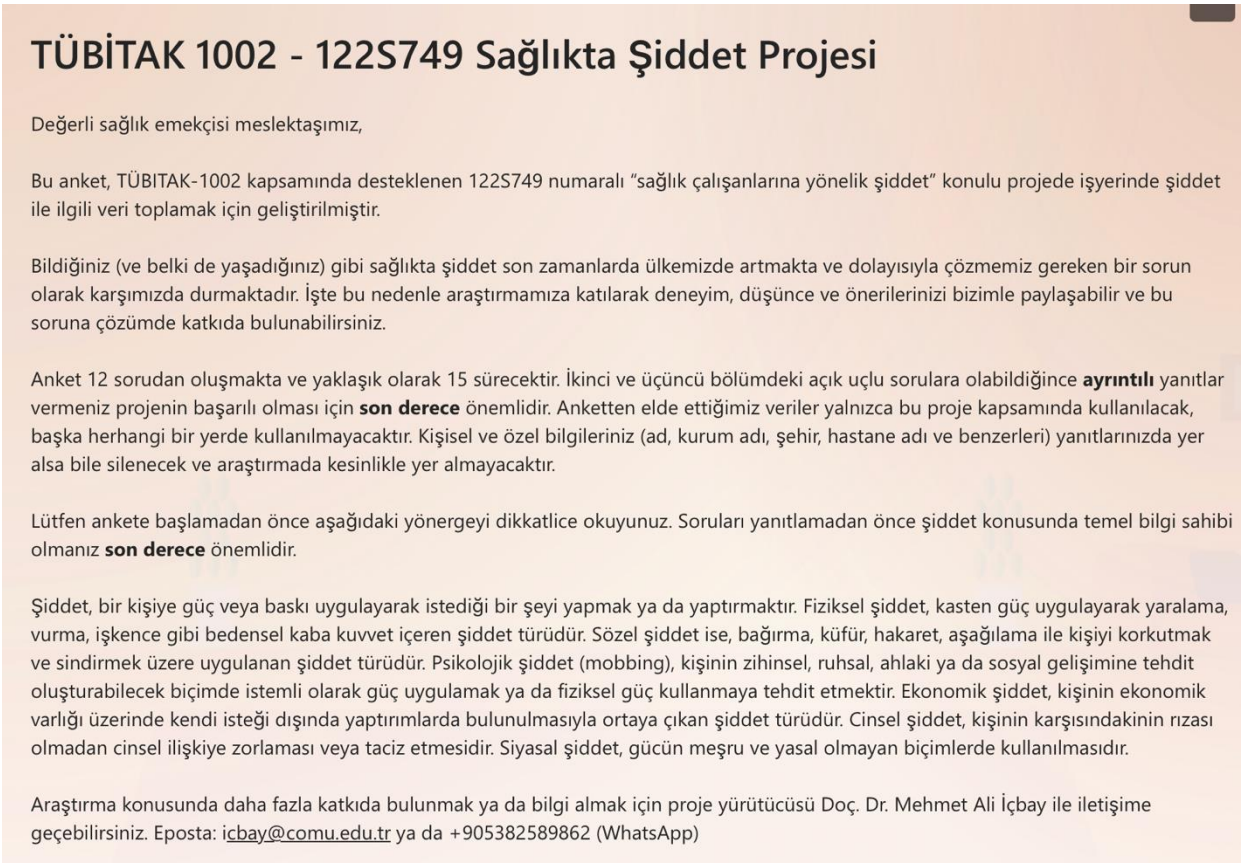
2. MATERIALS AND METHOD

This study employs both quantitative and qualitative approaches to explore the prevalence, forms, impacts, and management strategies of workplace violence experienced by healthcare workers in Türkiye. The study was conducted through an online survey distributed across various healthcare settings, including teaching hospitals, state hospitals, and private facilities, ensuring a diverse representation of healthcare professionals.

The survey was designed with structured and open-ended questions, allowing for both statistical analysis and the extraction of rich, descriptive data from the participants' experiences. The questions in the survey aimed to explore the participants' experiences with workplace violence, including the prevalence, forms, impacts, and management strategies employed in response to violent incidents. The survey consisted of 7 structured and 5 open-ended questions, allowing participants to provide detailed responses about their experiences (see Table 1 for the 5 open-ended questions and Figure 1 for the screenshot of the online survey).

Table 1. Open-ended questions used in the survey (Turkish originals in the first column and then English translated versions in the second column).

1. Mesleğinizde sizi en çok etkileyen şiddet vakası hangisiydi? Bu soruyu yanıtlarken başınıza gelmiş şiddet olayını anlatabilir ya da şahit olduğunuz bir olayı yazabilirsiniz.	1. What was the violence incident that affected you the most in your profession? While answering this question, you can describe an incident of violence you experienced or write about one you witnessed.
2. Yukarıda anlattığınız şiddet olayı sırasında durumla başa çıkmak için neler yaptınız? Yardım aldınız mı? Yardım için kime başvurdunuz? Şiddet sırasında size yardıma gelen oldu mu? Kimler?	2. What did you do to cope with the situation during the violence incident you described above? Did you receive help? Whom did you turn to for help? Did anyone come to assist you during the incident? If so, who?
3. Bir önceki soruda anlattığınız şiddet olayı sonrasındaki tecrübenizi, yaşadığınız durumları anlatır mısınız? Şiddet sonrasında neler yaptınız? Adli bir süreç yaşandı mı? Destek aldınız mı?	3. Can you describe your experiences and the situations you faced after the violence incident mentioned in the previous question? What did you do after the violence? Was there a legal process? Did you receive any support?
4. Sizce sağlıkta şiddeti engellemek (ya da azaltmak ve gidermek) için neler yapılmalı? Sağlık çalışanlarını için neler yapılabilir? Sağlıkta şiddet madurlarını korumaya dönük neler yapılabilir?	4. In your opinion, what should be done to prevent (or reduce and eliminate) violence in healthcare? What can be done for healthcare workers? What measures can be taken to protect the victims of violence in healthcare?
5. Sizce sağlıkta şiddeti önleme programında neler olmalı? Hastane çalışanlarına yönelik oluşturulması planlanan programda siz olsaydınız hangi başlıkların yer almasını isterdiniz?	5. What do you think should be included in a violence prevention program in healthcare? If you were involved in developing a program for hospital employees, what topics would you like to see included?



TÜBİTAK 1002 - 122S749 Sağlıkta Şiddet Projesi

Değerli sağlık emekçisi meslektaşımız,

Bu anket, TÜBITAK-1002 kapsamında desteklenen 122S749 numaralı "sağlık çalışanlarına yönelik şiddet" konulu projede işyerinde şiddet ile ilgili veri toplamak için geliştirilmiştir.

Bildiğiniz (ve belki de yaşadığınız) gibi sağlıkta şiddet son zamanlarda ülkemizde artmakta ve dolayısıyla çözmemiz gereken bir sorun olarak karşımızda durmaktadır. İşte bu nedenle araştırmamıza katılarak deneyim, düşünce ve önerilerinizi bizimle paylaşabilir ve bu soruna çözümde katkıda bulunabilirsiniz.

Anket 12 sorudan oluşmakta ve yaklaşık olarak 15 sürecektir. İkinci ve üçüncü bölümdeki açık uçlu sorulara olabildiğince **ayrıntılı** yanıtlar vermeniz projenin başarılı olması için **son derece** önemlidir. Anketten elde ettiğimiz veriler yalnızca bu proje kapsamında kullanılacak, başka herhangi bir yerde kullanılmayacaktır. Kişisel ve özel bilgileriniz (ad, kurum adı, şehir, hastane adı ve benzerleri) yanıtlarınızda yer alsa bile silenecek ve araştırmada kesinlikle yer almayacaktır.

Lütfen ankete başlamadan önce aşağıdaki yönergeyi dikkatlice okuyunuz. Soruları yanıtlamadan önce şiddet konusunda temel bilgi sahibi olmanız **son derece** önemlidir.

Şiddet, bir kişiye güç veya baskı uygulayarak istediği bir şeyi yapmak ya da yaptırmaktır. Fiziksel şiddet, kasten güç uygulayarak yaralama, vurma, işkence gibi bedensel kaba kuvvet içeren şiddet türüdür. Sözel şiddet ise, bağırma, küfür, hakaret, aşağılama ile kişiyi korkutmak ve sindirmek üzere uygulanan şiddet türüdür. Psikolojik şiddet (mobbing), kişinin zihinsel, ruhsal, ahlaki ya da sosyal gelişimine tehdit oluşturabilecek biçimde istemli olarak güç uygulamak ya da fiziksel güç kullanmaya tehdit etmektir. Ekonomik şiddet, kişinin ekonomik varlığı üzerinde kendi isteği dışında yaptırımlarda bulunulmasıyla ortaya çıkan şiddet türüdür. Cinsel şiddet, kişinin karşısındakinin rızası olmadan cinsel ilişkiye zorlaması veya taciz etmesidir. Siyasal şiddet, gücün meşru ve yasal olmayan biçimlerde kullanılmasıdır.

Araştırma konusunda daha fazla katkıda bulunmak ya da bilgi almak için proje yürütücüsü Doç. Dr. Mehmet Ali İçbay ile iletişime geçebilirsiniz. Eposta: icbay@comu.edu.tr ya da +905382589862 (WhatsApp)

Figure 1. The screenshot of the online survey (in Turkish).

Data collection spanned from October to December 2023, with online informed consent obtained from all participants prior to their involvement. To safeguard confidentiality, all responses were anonymized, and participants were assured of the privacy of their contributions. The survey was distributed using online survey platforms, professional networking sites, and email listservs targeting healthcare professionals. At the end of the data collection, a total of 136 healthcare workers participated, including physicians, nurses, medical students, residents, and support staff, providing insights from a broad range of perspectives.

The data were analyzed using both quantitative methods, such as descriptive statistics for the demographic and structured responses, and qualitative methods, specifically thematic analysis, for the open-ended responses. This dual approach enabled a comprehensive understanding of workplace violence in healthcare, capturing both its prevalence and the nuanced personal experiences of the participants.

The data obtained from the open-ended questions were rigorously analyzed using Colaizzi's (1978) methodological framework to ensure a thorough understanding of workplace violence in healthcare. The process began with the researcher compiling and organizing all participant responses for each open-ended question. This initial stage involved a careful review of the data, during which the researcher corrected any inconsistencies or incomplete answers to maintain the integrity and accuracy of the information. Following this preparatory phase, the researcher fully engaged with the participants' responses, immersing themselves in the detailed narratives to develop a deep, holistic understanding of workplace violence from the perspective of those directly affected. This immersion allowed the researcher to become attuned to the emotional and contextual nuances embedded in the data.

The next step in the analysis was to identify and extract key statements and phrases that explicitly related to the experience of workplace violence. These significant statements were not just isolated fragments but were treated as building blocks for constructing meaningful interpretations. Each statement was then carefully examined to derive critical meanings that reflected the complexity and depth of the participants' lived experiences. Once the meanings were formulated, they were systematically organized into thematic clusters, each representing distinct aspects of workplace violence. These clusters helped structure the analysis, allowing for a more focused exploration of recurring patterns and key issues that emerged from the data. The researcher then synthesized these evolving insights into a comprehensive description that captured the multifaceted nature of workplace violence. This synthesis presented a rich, layered portrayal of the phenomenon, incorporating the emotional, psychological, and professional impacts on healthcare workers.

The participants' responses to the open-ended questions are presented in this manuscript as direct quotations, as faithfully as possible. However, to enhance both readability and ensure an accurate translation from Turkish to English, certain adjustments have been made to the original wording. In some instances, minor edits were applied to the participants' quotes, including changes in phrasing and sentence structure, while preserving the core meaning and intent of their responses. These modifications were made with the goal of maintaining the integrity of the participants' experiences while making the text clearer and more accessible to an international audience.

To ensure the reliability and completeness of the findings, the researcher employed member checking, a vital step in the qualitative research process. In this phase, a subset of participants was invited to review the preliminary descriptions of their experiences. Their feedback was crucial for validating the accuracy of the interpretations and for providing additional insights that might have been overlooked initially. These contributions were thoughtfully integrated into the final narrative, thereby enriching the overall understanding of workplace violence and providing a more authentic representation of the participants' lived experiences (Beck, 1992, p. 167).

3. RESULTS

The findings section of this study explores the multifaceted nature of workplace violence against healthcare workers, drawing insights from the experiences recounted by 136 participants across Türkiye. The section begins by demonstrating the demographic characteristics of the respondents, providing a comprehensive overview of their ages, professional roles, work experience, and gender distribution. These insights underscore the diverse composition of healthcare workers involved in the survey, ranging from medical students and residents to attending physicians, nurses, and support staff. Additionally, the workplace settings where these individuals operate, including teaching hospitals, state hospitals, private hospitals, and general practitioner practices, are outlined, offering context for understanding the varying dynamics of workplace violence across different healthcare environments.

The subsequent exploration focuses on the fundamental characteristics of workplace violence experienced by healthcare workers, illuminating the prevalence and forms of aggression encountered within healthcare settings. To start with, verbal abuse emerges as a predominant form of violence, encompassing insults, threats, and humiliation, while physical violence poses significant risks to the safety of healthcare professionals. Instances of violence extend beyond patient-physician interactions to encompass coworker

confrontations, highlighting the pervasive nature of the issue within healthcare institutions. Furthermore, the inadequate support from hospital administrators and the legal system exacerbates the distress experienced by healthcare workers, underscoring the need for systemic interventions to address workplace violence effectively. Through an in-depth analysis of respondents' experiences and perceptions, this section provides valuable insights into the complexities of workplace violence in healthcare settings, laying the groundwork for targeted interventions and policy reforms to mitigate its prevalence and impact.

3. 1. Preliminaries

The participants, with an average age of 32, spanned a broad age range from 20 to 60. Notably, the survey encompassed a diverse spectrum of healthcare professionals, with younger contributors represented by medical students (total 46) and residents (14), and more senior individuals, predominantly comprising attending physicians (23), nurses (13), secretaries (5), and other essential roles such as security personnel, janitors, and technicians, totaling 34 participants. The collective work experience of the participants averaged at 10 years, varying from a few years to a substantial 42 years.

Gender distribution within the survey revealed a representation of 84 female and 47 male healthcare workers. The workplace demographics exhibited a predominant presence in teaching hospitals (80), followed by state hospitals (31), with a smaller number in private hospitals (5) and a minority working as general practitioners (2). These insights into the diverse demographic composition of healthcare workers provide a foundation for understanding the varied perspectives and experiences captured in the survey responses.

3. 2. Exploring the basic characteristics of workplace violence

To start with, the predominant form of violence against physicians, as frequently cited by the respondents in the project, manifests verbally within healthcare settings. Such verbal abuse encompasses a spectrum of behaviors including insults, threats, blasphemy, and humiliation. An emergency resident, for example, recounted an incident detailing the occurrence of verbal violence in the emergency department:

"During my residency in the emergency ward, a gunshot victim arrived in their private vehicle during my night shift. Accompanied by an unruly group of relatives, they unleashed a torrent of curses, insults, and threats upon us, threatening to harm us should the patient not survive. The brunt of this verbal assault fell upon the residents that night, forcing us to seek refuge elsewhere in the hospital."

Another resident reported a violence encounter where physicians faced direct threats:

"While attending to a patient during my residency, I was confronted by a relative of another patient who threatened me, shouting: I'll kill you."

The nature of humiliation permeates various interactions within healthcare settings, from undermining physicians and their works to using offensive terms to psychologically harm them at work. One observer recounted a disturbing incident:

"While waiting in line at the hospital, I overheard a woman assert, "Healthcare workers sometimes deserve a beating," simply because the doctor was ten minutes late for an appointment. Whether the doctor overheard remains uncertain, but he proceeded to attend to patients without delay."

The physicians are also subjected to physical violence, exposing them not only to bodily harm but also to perilous encounters. A nurse shared her harrowing experience:

"In the midst of administering care to a patient, whom I had just managed to calm, the patient's relative lunged at me in a fit of rage."

Similarly, a resident recalled a violent episode witnessed in the emergency surgery room:

"Approximately 17 to 20 years ago, at the [name] teaching hospital, relatives of a patient violently assaulted a resident surgeon. One assailant struck the resident in the eye, shattering his glasses and causing a piece of glass to lodge in his eye, endangering his sight."

Even within the confines of an ambulance, healthcare personnel are not immune to aggression. An emergency medical technician recounted an alarming encounter:

"While transporting a female patient complaining of a headache, she demanded water. Upon refusal, she asked the driver to stop to buy water from a store. When the driver turned her down, she launched an attack on the healthcare team in the ambulance."

The occurrence of violence within healthcare settings extends beyond patient-physician interactions to encompass incidents involving coworkers. This includes various forms of violence such as verbal, physical, and even sexual abuse. A medical student recounted an altercation between two physicians:

"A disturbing incident unfolded during clinic duty when two physicians engaged in a physical fight. They kicked and punched each other in broad daylight."

Similarly, a radiotherapy student shared a harrowing experience from her internship:

"While interning in the radiotherapy department of a state hospital, I endured emotional, physical, and psychological abuse at the hands of a technician responsible for a radiology gadget. Threatened with termination and jeopardizing my training, I was coerced into an emotionally manipulative relationship. Throughout my internship, I endured relentless psychological torment."

Instances of coworker violence extend beyond direct confrontations to encompass abusive interactions with administrators and managers, as recounted by a medical student:

"Regrettably, some of our teachers, who are also colleagues, subject residents and students to verbal and psychological abuse. I have personally experienced similar mistreatment and have heard numerous complaints echoing throughout the school."

Moreover, healthcare workers lament the lack of support from administrators and managers, which they perceive as a form of psychological violence. A physician from a state hospital expressed the detrimental impact on their wellbeing:

"Hospital administrators hastily condemn us based on unfounded patient complaints, solely to bolster their hospital's ratings, without conducting any investigations."

Sexual abuse further compounds the challenges faced by healthcare workers, leaving lasting scars on their wellbeing. A nurse shared her distressing ordeal:

"I had to endure relentless verbal abuse at work. It took a toll on my motivation, leaving me devoid of enthusiasm for my duties."

Similarly, an incident involving both sexual abuse and threats underscored the vulnerability of healthcare workers:

"A patient brazenly violated our privacy by taking unauthorized photographs of residents and nurses, accompanied by chilling threats of violence, saying he would shoot all of us at 6:30 pm. Shockingly, neither physicians nor security personnel intervened to protect us from harm."

3. 3. Handling workplace violence

One of the primary inquiries in the project explores the strategies healthcare workers employ to manage instances of violence encountered in their workplace. The respondents are specifically asked about the nature of support they receive, and if they have any, the sources of such assistance. Their answers indicate that among the 134 participants, 34 refrain from seeking help when confronted with workplace violence, while 14 report no such experiences. The approaches adopted by healthcare workers who choose not to seek aid vary, ranging from remaining silent to evading the violent setting or waiting for intervention from others present.

"I cried for one hour during the appointments. My peers came to console me. As a result, the patients had to wait."

"I called the hospital security and requested the assistance of another doctor to see the patient. Due to concerns about the patient's psychological state and the potential for violence, I unfortunately chose not to get involved."

"I dialed the White Code. My friend and I hid in the room."

Some respondents opt not to seek external assistance, relying on their own resources to navigate the situation. For instance, in moments of crisis, they may resort to personal coping mechanisms, such as remaining composed or finding solace in isolation. A physician, for example, recounts a distressing incident where she did not actively seek assistance, but rather found refuge in the support extended by patient relatives and hospital staff, who collectively helped de-escalate the situation.

"I did not ask for any help. Instead, other patient relatives and hospital personnel helped to calm down the violent patient."

Peer support emerges as a predominant form of assistance for healthcare workers grappling with workplace violence. This camaraderie often involves fellow physicians, nurses, or administrative staff within the same hospital environment. The following examples highlight instances where peers intervened effectively, such as a department secretary stepping in to aid in removing a violent patient from an examination room, or a senior resident calmly addressing an agitated patient's relative, leading to resolution and de-escalation.

"The department secretary working next to the examination room came to help me. Together, we were able to remove the patient who was causing violence from the room."

"Upon hearing the mother's screams, I immediately called the female resident who is older than me. The resident calmly spoke with them and provided a detailed explanation of the patient's rights to the

accompanying relative. Subsequently, the relative left the hospital shouting at us."

"By chance, my friend, who was a resident in the same hospital, was present in the room. He intervened in the situation and successfully calmed down the patient's relative."

Many healthcare workers opt for direct engagement with the involved parties, employing communication and conflict resolution techniques to diffuse tension and mitigate further escalation. Instances are cited where workers effectively communicate with patients and their relatives, emphasizing non-violent approaches and seeking mutually agreeable solutions to underlying issues.

"I explained to the patient that violence was not the solution and reassured them that if they were seeking someone to blame, it was not the doctor. After receiving confirmation that another doctor in the hospital would attend to them, the patient's relative calmed down."

"My friends and I calmly and patiently spoke with the patient's relative, successfully calming them down."

"I calmly managed the situation and found a mutually agreeable solution."

"I made a conscious effort to remain calm and composed during the situation."

In more severe cases, healthcare workers resort to summoning institutional support, such as hospital security, police intervention, or managerial involvement, to address imminent threats and ensure the safety of all parties involved. Instances underscore the critical role of swift institutional response, as exemplified by the timely arrival of security personnel in potentially life-threatening situations, averting potential harm to healthcare workers.

"The hospital security was not present in the area. They were subsequently called. Had the patient been carrying a knife or something similar, my friend could have been in grave danger. Fortunately, he did not possess any such weapon. Otherwise, by the time security arrived, he might have already been seriously harmed or killed."

"I initiated a White Code call, and the security promptly arrived."

"I sought assistance by asking for help. The hospital security and police promptly intervened, with the police also requesting backup forces."

As part of the follow-up inquiry, the respondents were questioned about their course of action following incidents of violence in the workplace. The focus was on delineating the legal recourse pursued against the perpetrators of violence, as well as assessing the support received during the legal proceedings. Of the participants, 16 reported that legal action had been initiated against the individuals responsible for the violent behavior. Upon encountering violence, the respondents often resorted to activating emergency protocols such as *Beyaz Kod*. Subsequently, legal procedures were set in motion to address the misconduct. For instance, in one case, after contacting *Beyaz Kod*, the judicial process ensued, leading to the imposition of fines on the individual responsible for the violent behavior.

"I activated Beyaz Kod, initiating a subsequent judicial process. The individual responsible for the violence incurred a fine."

Although most did not seek for help, a few respondents recounted receiving psychological support from their peers or professionals. Despite this assistance, some individuals ultimately made the difficult decision to resign from their positions due to the traumatic nature of the incident.

"For the cases in which I activated *Beyaz Kod*, a judicial process unfolded. I received psychological and procedural support from emergency doctors. Ultimately, I made the difficult decision to resign from my job."
"Following the trauma induced by the incident, I sought brief professional assistance from a psychologist through an online counseling service. The trauma had a significant impact on my life."

"I quit my resident position."

The others, however, expressed a lack of awareness regarding whether legal actions were undertaken or did not actively engage in the legal process. For example, one respondent, following a particularly distressing incident during a night shift, did not know what happened after the incident, but left the hospital feeling disheartened and disillusioned about pursuing a career as a general practitioner.

"We rarely had a quiet night. Leaving the hospital with a sense of worry, I found myself reevaluating my thoughts about the profession. That night, my aspirations of becoming a General Practitioner vanished entirely. I am uncertain whether any legal proceedings ensued, but I do recall the presence of the police that night."

A prevailing theme among respondents was a sense of disillusionment with the legal system's efficacy in addressing workplace violence within healthcare

settings. Many recounted instances where legal processes yielded minimal consequences for the perpetrators, if any. Despite efforts to involve law enforcement and managerial figures in the legal proceedings, outcomes often fell short of delivering justice, with aggressors escaping punitive measures.

“The hospital's chief manager actively participated in the judicial process alongside a lawyer. I also contacted the police station. However, the aggressor was released that night.”

“The court proceedings unfolded, but due to the absence of visible harm, the court did not find him guilty, resulting in no punishment."

3. 4. Preventing workplace violence

The final section of the survey focused on soliciting the respondents' suggestions for preventing workplace violence in healthcare settings. Their answers were explored in three main themes. The first theme centers on recommendations directed towards hospital administration. The first group of suggestion in this theme targets enhancing security measures in the hospitals. A prevalent suggestion among respondents was the implementation of more effective security measures within hospitals. For instance, one respondent proposed the installation of x-ray machines at hospital entrances, akin to those found in malls, as a highly effective preventive measure.

“The hospital entrance holds paramount significance. X-ray machines, akin to those found in malls, should be installed at hospital entrances as a critical preventive measure, ensuring the safety of healthcare workers.”

Another recommendation emphasized the need to ensure proper utilization of x-ray machines at hospital gates, coupled with motivating security personnel to be more vigilant in their duties.

“The utilization of the x-ray machines at hospital gates is essential, and they should be operated with precision. Security personnel must be motivated to diligently perform their duties and maintain a heightened level of vigilance.”

In line with bolstering security, some respondents advocated for thorough body searches to prevent firearms or similar weapons from entering hospitals, while others proposed the deployment of formal security forces, such as police or gendarmerie.

“Ensuring security for healthcare workers is imperative. Entrance to hospitals with firearms, knives, or similar gadgets should be strictly prohibited. Additionally, formal security forces should be available to support hospital security when required. Presently, hospital security personnel are equipped with batons only, which, unfortunately, diminishes the seriousness with which people perceive hospital security.”

The second group of suggestion focus on utilizing surveillance technology. In addition to ramping up security, the suggestions were made to install CCTV cameras in examination rooms. The rationale behind this proposal was to deter potential assailants from targeting healthcare workers in clinical settings. Further, respondents proposed equipping doctor's rooms with recording devices specifically for documenting incidents of violence.

“Each doctor's room should be equipped with a dedicated recording device, specifically intended for documenting incidents of violence.”

The third group emphasize creating safe spaces and support systems in the healthcare settings. The respondents recommended the establishment of "panic rooms" within hospitals where healthcare workers can seek refuge and support during instances of workplace violence. Also, a novel suggestion involved designing examination rooms with two doors, providing healthcare workers with an emergency exit option in violent situations.

“Doctor offices or examination rooms should include an additional door that healthcare professionals can use when they feel threatened. For instance, patients typically utilize the primary door situated in front of the doctor's table. However, in moments of heightened tension, the doctor may find themselves confined between the table and the patient, unable to exit using the door accessible to the patient.”

Some respondents advocated for the establishment of a "healthcare worker rights office" alongside existing patient rights units, providing healthcare workers with a platform to address complaints and grievances.

“Similar to the existing 'Patient Rights Unit' in hospitals, there should be 'Worker Rights Unit.' In instances where patients file complaints, we [healthcare workers] are mandated to formulate their own defenses. However, in comparable scenarios, we currently lack an alternative recourse aside from resorting to legal action. This will provide a platform for us to address and discuss their grievances. This unit would enable healthcare workers to present their formal defenses, while also requiring the alleged aggressor to submit their oral or written defenses within a specified timeframe.”

Furthermore, the recommendations were made to develop a notification feature in patient appointment systems, enabling healthcare workers to be alerted about previous offenders (or potential aggressors). This

proactive measure would empower healthcare workers to take necessary precautions before interacting with such patients.

“When patients [who have previously exhibited violent behavior] revisit the hospital, the system should notify us. Additionally, these patients should also be made aware of these warnings.”

The second theme revolves around the actions that government entities should take to prevent workplace violence in healthcare settings. One prevailing suggestion is the need to alleviate patient overcrowding, which many respondents believe is pivotal in reducing violence against healthcare workers. The respondents in the project highlighted the correlation between patient overcrowding and instances of violence, emphasizing that high patient volumes contribute to heightened stress and fatigue among healthcare workers. This, in turn, exacerbates tensions and aggression from patients and their relatives.

“As long as there are too many patients, I think it is not possible to prevent violence in the hospitals. Healthcare workers operate under heightened stress and fatigue due to the sheer volume of patients, leading to increased tension and aggression from both patients and their relatives. When healthcare workers are overwhelmed, the likelihood of encountering violent incidents escalates, resulting in undesirable outcomes.”

The recommendations were made for implementing a more effective referral system, where patients are encouraged or mandated to first seek care from their General Practitioners (GPs) before visiting hospitals or emergency departments. Establishing clear referral chains between different levels of healthcare institutions was also advocated to streamline patient flow and reduce congestion in hospitals.

“There is a need to establish a robust referral chain. Patients should not have direct access to doctors within hospitals.”

“Clarity should be provided regarding the boundaries between first-, second-, and third-degree healthcare institutions. There should be an immediate implementation of a comprehensive referral chain."

Another set of suggestions pertains to the role of government or health ministries in providing support systems for both healthcare workers and patients. For healthcare workers, the authorities can implement various support measures to address workplace violence, such as the right to be reassigned to a different workplace, provision of paid leave, access to counseling services, legal assistance for judicial proceedings, and training in anger management and communication skills.

“Healthcare workers who experience violence are often compelled to continue working immediately after the incident. This practice requires improvement; at the very least, they should be granted time off until they feel mentally and physically prepared to return to work."

“Consideration should be given to providing victims with paid vacation for a period of 6 months to 1 year. Alternatively, they should be afforded the opportunity to transfer to another hospital without encountering bureaucratic obstacles."
“There is a need for comprehensive training programs to educate doctors on empathy and effective communication skills."

The respondents stressed the need for healthcare workers who have experienced violence to be given time off to recuperate, suggesting paid vacation periods ranging from six months to a year, or facilitating seamless transfers to alternative hospitals. Additionally, training programs focusing on empathy, communication, and basic self-defense techniques, including martial arts and firearm training, were recommended for doctors.

“Doctors should be granted firearms licenses.”

“Doctors should receive training in close combat skills.”

The suggestions targeting patients and their relatives involve proactive measures to deter repeat incidents of violence. The most common proposal is the imposition of fines on perpetrators of violence, potentially accompanied by bans on hospital visits for a specified period. Some respondents advocated for stricter penalties, including exclusion from universal healthcare and imprisonment.

“Aggressors should face severe punishment, including compensation for damages, exclusion from the free universal healthcare system, and imprisonment for a substantial duration.”

“Individuals who have committed acts of violence should be held accountable for their healthcare expenses, even for minor complaints.”

There was a consensus among respondents that existing legislation on workplace violence against healthcare workers is insufficient and requires revision to impose harsher penalties as deterrents.

"Deterrent actions must be implemented. There should be a review of existing legislation."

"Laws should impose stricter fines on individuals who perpetrate violence against healthcare workers."

Lastly, the third theme underscores the perceived ineffectiveness of medical unions and associations in addressing workplace violence issues. Respondents expressed a desire for stronger professional organizations and more advocacy efforts, including organized protests, to amplify their voices and advocate for their rights within the healthcare sector. As a follow-up question, the respondents are asked about their opinions regarding the training program on preventing violence for healthcare workers. They articulated their suggestions for the content of this hypothetical training, shedding light on critical areas for improvement.

Many respondents highlighted the imperative need for a comprehensive training program addressing anger and violence management. The consensus among healthcare professionals underscores the importance of equipping workers with the tools to navigate challenging situations involving anger and potential violence effectively. One nurse, for example, emphasized the necessity for an awareness training that goes beyond online modules or sporadic assistance.

Another crucial aspect identified by a respondent is the incorporation of crisis management skills. This encompasses training healthcare workers in empathy and communication, essential components for diffusing tense situations and providing effective care. For many, crisis management skills are pivotal in handling unexpected events and ensuring that healthcare professionals can respond calmly and effectively under pressure.

A resident provided a critical perspective, emphasizing the need to separate personal emotions, such as sadness, anger, or embarrassment, from professional duties. This highlights the importance of maintaining a level of professional seriousness, especially in emotionally charged situations like delivering difficult news. The respondent stressed the significance of strategic communication, suggesting precautions such as avoiding being alone when delivering challenging information to mitigate the risk of encountering aggressive behavior from patient relatives."We should not intertwine our personal emotions, such as sadness, anger, or embarrassment, with our professional responsibilities. I think maintaining a consistent level of professional seriousness at work is essential. For instance, when delivering distressing news, it is advisable not to be alone, as patient relatives often exhibit heightened aggression when confronted with unexpected or undesired information."

In essence, the respondents collectively emphasizes the importance of a multifaceted training program that addresses emotional management, crisis intervention, and the preservation of professionalism in emotionally charged scenarios. Such a comprehensive approach aims to enhance the overall resilience and effectiveness of healthcare workers in navigating the complexities of their roles.

4. DISCUSSION

The findings of this study shed light on the multifaceted nature of workplace violence against healthcare workers, providing a comprehensive understanding of its prevalence, forms, and impacts within healthcare settings. The demographic characteristics of the participants, as listed in the preliminary findings, underscore the diverse composition of healthcare workers affected by workplace violence across various professional roles and settings. This diversity highlights the universal nature of the issue and the need for targeted interventions that address the unique challenges faced by different groups of healthcare professionals.

The exploration of the basic characteristics of workplace violence reveals the pervasive nature of verbal and physical aggression encountered by healthcare workers in their daily practice (see Cevik et al. 2020). The prevalence of verbal abuse, ranging from insults and threats to humiliation, emphasizes the profound impact of hostile interactions on the well-being and safety of healthcare professionals (Icbay, 2024). Additionally, the instances of physical violence recounted in the study highlight the grave risks faced by healthcare workers in the line of duty, underscoring the urgent need for effective measures to ensure their protection (Pinar et al. 2017).

The findings also highlight the inadequacy of support systems within healthcare institutions and the legal system, exacerbating the distress experienced by healthcare workers in the aftermath of violent incidents (see Er et al. 2020). The lack of support from hospital administrators and managers, as well as the perceived ineffectiveness of legal recourse, further compounds the challenges faced by healthcare workers in addressing workplace violence. This underscores the importance of systemic interventions and policy reforms that prioritize the safety and well-being of healthcare professionals and hold perpetrators of violence accountable for their actions (Abu AlRub & Al Khawaldeh, 2014; Zafar et al., 2013).

In terms of handling workplace violence, the study reveals a range of strategies employed by healthcare workers to manage violent incidents in their workplace. While some respondents opt for internal coping mechanisms or peer support, others resort to institutional support, such as hospital security or legal intervention, to address imminent threats and ensure the safety of all parties involved. However, the findings

also point to gaps in existing support systems, highlighting the need for comprehensive training programs and enhanced institutional protocols to equip healthcare workers with the skills and resources necessary to effectively manage and prevent workplace violence tensions (Hamdan & Abu Hamra, 2015; Tucker et al., 2015).

The recommendations provided by the respondents for preventing workplace violence offer valuable insights into potential interventions at the organizational, governmental, and professional levels. From enhancing security measures and utilizing surveillance technology to implementing support systems and advocacy efforts, these recommendations focus on the importance of a complex approach to addressing workplace violence in healthcare settings. Furthermore, the suggestions for the content of training programs on preventing violence for healthcare workers highlight the need for comprehensive training that addresses emotional management, crisis intervention, and the preservation of professionalism in emotionally charged scenarios.

5. CONCLUSIONS

This study provides a comprehensive examination of workplace violence against healthcare workers, drawing insights from the experiences recounted by 136 participants across Türkiye. The findings reveal the multifaceted nature of workplace violence, highlighting its prevalence, forms, impacts, and management strategies within healthcare settings. By elucidating the demographic characteristics of the participants, the study demonstrates the diverse composition of healthcare workers affected by workplace violence, emphasizing the universal nature of the issue and the need for targeted interventions that address the unique challenges faced by different groups of healthcare professionals. The exploration of the basic characteristics of workplace violence underscores the pervasive nature of verbal and physical aggression encountered by healthcare workers in their daily practice. The prevalence of verbal abuse, ranging from insults and threats to humiliation, highlights the profound impact of hostile interactions on the well-being and safety of healthcare professionals. Additionally, the instances of physical violence underscore the grave risks faced by healthcare workers in the line of duty, emphasizing the urgent need for effective measures to ensure their protection.

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The recommendations provided by the respondents for preventing workplace violence offer valuable insights into potential interventions at the organizational, governmental, and professional levels. From enhancing security measures and utilizing surveillance technology to implementing support systems and advocacy efforts, these recommendations underscore the importance of a multifaceted approach to addressing workplace violence in healthcare settings. Furthermore, the suggestions for the content of training programs on preventing violence for healthcare workers highlight the need for comprehensive training that addresses emotional management, crisis intervention, and the preservation of professionalism in emotionally charged scenarios.

Several limitations should be noted when interpreting the findings of this study. Firstly, the use of online survey methods may have introduced selection bias, as participants who chose to respond to the survey may have different characteristics or experiences compared to those who did not participate. Additionally, the reliance on self-reported data may have been subject to recall bias or social desirability bias, potentially influencing the accuracy and reliability of the responses provided by the participants. Furthermore, the cross-sectional nature of the survey precludes the ability to establish causal relationships between variables or to capture longitudinal changes in workplace violence over time. Future research employing longitudinal designs or mixed-methods approaches may help address these limitations and provide a more comprehensive understanding of the factors contributing to workplace violence in healthcare settings.

In conclusion, the findings of this study underscore the urgent need for concerted efforts to address workplace violence against healthcare workers. By elucidating the prevalence, forms, impacts, and management strategies of workplace violence, this study provides valuable insights that can inform the development of targeted interventions, policy reforms, and training programs

aimed at ensuring the safety and well-being of healthcare professionals in their workplace.

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Conflict of Interest:
The authors declare that they have no conflict of interest.

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The Communication Skills of Healthcare Professionals as Opposed to Those Working Outside The Healthcare Sector

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ABSTRACT

Communication is an inevitable method of interaction that exists wherever humans are present. Communication skills are not innate abilities; rather, they are skills that can be learned and developed. Healthcare workers use mutual communication more frequently compared to employees in other sectors. Therefore, this study was conducted to compare the communication skills of secretaries working in the healthcare sector with those working outside of the healthcare sector in Kayseri. The data collection tools used in the study were a demographic information form and the Communication Skills Assessment Scale (CSAS), developed by Korkut (1996a, 1997). Data were collected from 375 secretaries who voluntarily agreed to participate in the study. The data were analyzed using the SPSS 25.0 program. While no significant differences related to demographic characteristics were found, significant differences were detected in communication skill scores. It is anticipated that this study will raise awareness in the existing literature and that conducting similar studies in different institutions and sectors will help to address communication deficiencies at an institutional level by assessing the results separately.

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1.INTRODUCTION

Communication is among the elements that enable people to adapt to the environment. Relationships between people occur through communication. Different definitions of communication have been made from the past to the present. Communication is a multi-channel process that provides understanding through sharing feelings, thoughts, and information between people. Communication is not a personal skill but a series of techniques that can be learned. Communication is inevitable and critical at every moment of our lives. It is possible to talk about four primary functions of communication, which can be expressed as verbal or non-verbal information transfer. These are information, motivation, control, and excitement (Ateş et al ., 2018). All definitions of communication agree that it is an event carried out by people. Communication aims to create a commonality of information exchange, thought, feeling and attitude (Yüksel Şahin, 1999, p.13).

In addition to establishing good relationships between people through communication, effective communication is an effective tool for healthcare professionals in providing high-quality care. Effective communication is of immense importance in patients' decision-making processes. It is also possible to say that poor communication will increase patients' anxiety, make them feel more uncertain, and have adverse effects on satisfaction with care (Erişen, 2024, p.352).

The concept of communication is an inseparable part of our lives and is an inevitable action in every area where people are present. Communication is a vital action for social and personal relationships. When communication is not adequate, problems may occur in the established relationships. People who communicate with each other need to have communication skills. It is possible to define communication skills as using non-verbal communication effectively, reflecting emotions, and using empathy effectively. Communicating feelings and thoughts effectively using body language refers to communication skills (Yüksel Şahin, 1999, p.14).

To ensure healthy communication, listening and responding effectively is necessary. Communication skills include listening, being understandable and clear while speaking, establishing eye contact, and using body language appropriately (Omolulu, 1984). Communication is a result of people living together, and it is necessary. People cannot live together without communicating. When people communicate, they aim to understand themselves, express themselves to others, and know and influence them.

People are the most vital resource of institutions, and employees' high level of communication skills enables institutions to provide higher quality services. This is particularly significant in sectors where one-to-one communication is prevalent, such as healthcare. The unique challenges of the health sector, where traumatic situations are everyday, make effective communication even more critical. This research aims to not only shed light on the communication skills of those working in the health sector but also to underscore its practical importance and the need for further development.

Another purpose of communication is to ask for help from other people for needs that cannot be met alone, problems that cannot be solved, or behavior that cannot be performed (Tengilimoğlu & Öztürk, 2004). The purpose mentioned here is the best example of communication to be established in health institutions. Successes in communication skills affect institutions as well as individual gains. The employment of employees with successful and effective communication skills is of significant importance in the health sector.

Effective communication facilitates both human and professional relationships. High communication skills are also expected in sectors where people are frequently in contact. The health sector is at the forefront of these sectors. It is indisputable that communication is more important for employees working in the health sector, where traumatic situations are experienced more frequently.

For healthcare professionals, the communication concept covers the entire process from the moment patients apply to a healthcare institution until the end of the treatment process (Tabak, 1999). Every action, behaviour, and verbal or non-verbal attitude of healthcare professionals has a positive or negative effect on patients. Therefore, it is more important for healthcare professionals to have communication skills (Özcan, 2012).

Practical communication skills have a facilitating effect on communication established in every professional group, as well as communication established between people. As in every field, the health sector is also affected by today's developing and changing conditions and competitive environment. The health sector aims to increase the quality of the services it offers to keep up with the changes experienced and, therefore, attaches importance to the communication skills of its employees. Being a profession that involves closer communication with people shows that health workers should have high communication skills (Kumcağız et al., 2011, p.50). When communication skills are evaluated from the healthcare professionals' perspective, effective communication positively affects patient care. Healthcare providers should develop communication skills in problem-solving and helping (Gaskar & Özyazıcıoğlu, 2014, p.21).

In every area of life, we interact by shaping our behavior to be compatible with the environment and accepted by society. People have always lived in large groups by establishing solid and lasting relationships. Communication skills can be expressed as sensitivity to verbal or non-verbal messages, listening effectively and responding effectively. Gibson and Mitchell (1995)

insist on the definition of being sensitive and listening effectively to non-verbal messages. Just as communication skills are affected by many distinctive characteristics, cultures also affect skills and can change relationship patterns when desired. Although communication skills are thought to be innate, they can be learned and developed (Erozkan, 2005, p.135).

Secretaries are essential in the health sector, and those working in health services act as a bridge between patients, their relatives, and doctors. This study aims to contribute to health institutions by drawing attention to the importance of communication and communication skills among secretaries in the health sector because the people receiving health services need more attention and help. Although hospitals accept the whole society as their target audience, they are primarily interested in patients and their relatives. The fact that patients and their relatives are more prone to conflict and are stressed due to the traumatic situations they experience requires secretaries working in hospitals to work more carefully and devotedly. Since university hospitals, in particular, have more intense working conditions, employees providing secretarial services provide more tiring service delivery. The subject of secretaries working in hospitals is health. Health institutions that constantly receive feedback from patients who have received health services and evaluate this feedback are advantageous in achieving efficiency, effectiveness, and quality. With this understanding, secretaries systematically collect and evaluate this data to direct hospital work using patients' suggestions, complaints and thanks. Here, the communication skills of secretaries are essential.

This research aims to compare the communication skills of secretaries working in the health sector and those working outside the health sector and to determine whether there are differences between the sectors. The study aims to emphasize the difference between working as a secretary in the health sector and working as a secretary in institutions that do not provide health services, to find ways to cope with the difficulty and to improve the successful communication skills of the secretaries who do not work in the health sector applicable to those who work in the health sector. It is thought that this success can be achieved with in-service training with the necessary experts on what can be done for this and that the study will also contribute to the scientific studies to be carried out later.

The study evaluated the communication skills of different sectors, determined whether communication skills differ according to socio-cultural characteristics, and compared the changes in location and place among the same professional groups. People are among the most critical resources in the health sector, and their communication skills affect the institution's quality. It is thought that the study's results will contribute to the service provided in the field if considered by the institutions.

2. MATERIALS AND METHODS

This study, which used quantitative research methods, has a cross-sectional nature. Data were collected by applying a survey to 175 people working in the health sector (secretaries working in Erciyes University Health Application and Research Center Directorate) between 05.04.2019 and 24.04.2019 and 200 people working outside the health sector (secretaries working in Kayseri Metropolitan Municipality, Melikgazi and Kocasinan Municipalities) between 19.03.2019 and 19.04.2019. Secretaries were preferred because they are the professionals in most contact with patients and their relatives in hospitals, especially university hospitals, which are third-level health institutions.

Data Collection Tool

As data collection tools, a short "Personal Information Form" created to collect information about employees such as age, gender, profession, educational status, etc. and the Communication Skills Assessment Scale (CASS) developed by Korkut (1996a, 1997) were used. The questionnaire consists of 35 questions about the socio-demographic characteristics of individuals and the Communication Skills Assessment (Communication Skills Inventory) Scale (CSA) is a 5-point Likert-type scale developed by Korkut (1996a, 1997) to understand how individuals evaluate their communication skills. The scale consists of 25 (twenty-five) statements. The 5-point Likert-type scale is scored as 5-Always, 4-Frequently, 3-Sometimes, 2-Rarely, 1-Never. The validity and reliability of the scale were determined by Korkut (1996), and according to the results of the variance analysis, it was seen that the scale was one-dimensional. As a result of the reliability study, the reliability coefficient of the scale was obtained as 0.76 ($p<.001$). The alpha value as the internal consistency coefficient was 0.80 ($p<.001$). These validity and reliability studies conducted on the Communication Skills Assessment Scale (CSAS) have shown that the scale can be used to collect data to determine the level of perception of individuals' communication skills (Korkut, 1996).

The ranges in which the alpha coefficient can be found and, accordingly, the reliability status of the scale is given below:

If $0.0O \leq \alpha < O.40$, the scale is not reliable,

If $0.40 \leq \alpha < 0.60$, the scale has low reliability,

If $0.6O \leq \alpha < 0.80$, the scale is quite reliable,

$O.80 \leq \alpha < l, O0$, the scale is highly reliable (Akgül & Çevik, 2003; pp. 435-436).

The Communication Skills Assessment Scale (CSAS) was highly reliable in this study's sample group, with a Cronbach's Alpha value of 91.3%.

Statistical Analysis

Descriptive data are expressed in numbers and percentages. The histogram graph and QQ plot curve provide the condition of the quantitative data being

suitable for normal distribution. Therefore, the t-test and one-way ANOVA tests were performed in independent groups to analyze the scale score averages' differences. P<0.05 was accepted as statistically significant.

3. RESULTS

When the demographic characteristics of the 375 individuals who participated in the study were examined, the average age was 35.9 %. 59.7 % of the participants were women.

Table 1. Descriptive characteristics of the study group

Feature	n	Municipality employees		ERU employees	
Age group		**Number**	**%**	**Number**	**%**
18-24	18	14	77.8	4	22.3
25-34	160	84	52.2	76	47.5
35-44	135	55	40.4	80	59.3
45 and above	62	54	87.1	8	12.9
Gender					
Male	151	108	71.5	43	28.5
Woman	224	99	44.2	125	55.8
Marital status					
Married	284	157	55.3	127	44.7
Single	80	45	56.3	35	43.8
Separated from spouse/deceased	11	5	45.5	6	54.5
The school graduated from					
Middle school	6	5	83.3	1	16.7
High school and equivalent	74	59	79.7	15	20.3
High school	295	143	48.5	152	51.5
The situation of choosing the same profession					
Yes	175	129	73.7	46	26.3
No	200	78	39.0	122	61.0
The idea of doing business differently					
Yes	108	54	50.0	54	50.0
No	267	153	57.3	114	42.7
Year of work					
0-4 years	53	36	67.9	17	32.1
5-9 years	76	49	64.5	27	35.5
10-14 years	108	37	34.3	71	65.7
15-19 years	72	31	43.1	41	56.9
20-24 years	30	23	76.7	7	23.3
25 years and above	36	31	86.1	5	13.9
Total years of service					
0-4 years	56	42	75.0	14	25.0
5-9 years	75	49	65.3	26	34.7
10-14 years	113	38	33.6	75	66.4
15-19 years	68	28	41.2	40	58.8
20-24 years	25	18	72.0	7	28.0
25 years and above	38	32	84.2	6	15.8
Years of service in office					
0-4 years	118	86	72.9	32	27.1
5-9 years	90	60	66.7	30	33.3
10-14 years	90	20	22.2	70	77.8
15-19 years	44	16	36.4	28	63.6
20-24 years	11	7	63.6	4	36.4

25 years and above	22	18	81.8	4	18.2
Total	375	207	55.2	168	44.8

When the participants' marital status is evaluated, most are married. In terms of education, the participants are mostly college graduates. Most participants answered no when asked about their thoughts on doing a different job.

The communication skills inventory scale score average of the individuals participating in the study was 101.7 ±10.4, and Tables 2 and 3 compare the mean scores according to their descriptive characteristics.

Table 2. Comparison of communication skills inventory scale mean scores according to the descriptive characteristics of the research group

Feature	n	Mean ± SD	t	p
Gender				
Male	151	100.7± 11.8	1.36	0.175
Woman	224	102.3± 9.4		
Institution				
Council	207	102.2 ± 10.4	1.17	0.243
Erciyes University	168	100.9 ± 10.4		
The situation of choosing the same profession				
Yes	175	103.1 ± 10.3	2.69	**0.010**
No	200	100.4 ± 10.3		
The idea of doing business differently				
Yes	108	98.9 ± 10.5	3.20	**0.001**
No	267	102.7 ± 10.2		
Total	375	101.7 ± 10.4	-	-

Although communication skills scores were higher among female employees in the research group, no significant difference was found in communication skills score averages according to gender (p: 0.175).

According to institutions, no significant difference was found between the mean scores of communication skills of secretaries working in the health sector and secretaries working in the municipality, which was the central question of the research (p: 0.243).

A significant difference was found in the mean communication skills scores between those who said yes and those who said no to the question "If you had the chance to choose a profession again, would you choose the same profession again?" (p:0.010). The communication skills scores of those who wanted to choose the same profession were significantly higher than those who did not.

A significant difference was found in the communication skills mean scores between those who said yes and no to the question "Do you have any thoughts of leaving your current job and doing a different job?" (p:0.001). The communication skills scores of those without thoughts of doing a different job are significantly higher than those who want to do it.

Table 3. Comparison of mean scores of communication skills inventory scale among municipality and university employees by gender

Organization	Gender	n	Mean ± SD	t	p
Council	Male	108	101.5 ± 11.2	1.03	0.302
	Woman	99	103.0 ± 9.6		
University	Male	43	98.8 ± 13.1	1.36	0.180
	Woman	125	101.7 ± 9.3		
Total		375	101.7 ± 10.4		

There is no significant difference in the mean scores of the communication skills inventory scale among municipality employees according to gender (p:0.302), and there is no significant difference in the mean scores

among university employees according to gender (p:0.111).

Table 4. Comparison of communication skills inventory scale mean scores among municipality and university employees according to whether they choose the same profession.

Organization	Choosing the same profession	n	Mean ± SD	t	p
Council	Yes	129	103.7± 9.9	2.62	**0.009**
	No	78	99.8± 10.9		
University	Yes	46	101.6 ± 11.5	0.48	0.635
	No	121	100.8 ± 10.0		
Total		375	101.7 ± 10.4		

Among municipality employees who had the chance to choose a profession again, the mean scores for communication skills were significantly higher for those who stated that they would choose the same profession than those who stated that they would not (p:0.009). However, among university employees, there was no significant difference in mean scores for communication skills between those who stated that they would choose the same profession and those who did not (p:0.635).

Table 5. Comparison of the mean scores of the communication skills inventory scale among municipality and university employees according to their different job preferences.

Organization	The idea of doing business differently	n	Mean ± SD	t	p
Council	Yes	54	98.8 ± 12.1	2.88	**0.004**
	No	152	103.4 ± 9.5		
University	Yes	54	99.2 ± 8.8	1.56	0.122
	No	113	101.9 ± 11.1		
Total		375	101.7 ± 10.4		

Among municipality employees, the mean scores for communication skills were significantly higher in those with a different job idea than those without (p:0.004). However, among university employees, there was no significant difference in mean scores in communication skills between those who had a different job idea and those who did not (p:0.122).

Table 6. Comparison of communication skills inventory scale mean scores according to the descriptive characteristics of the research group

Feature	n	Mean ± SD	F	p
Age group				
18-24	18	101.7 ± 9.3	0.83	0.480
25-34	160	100.7± 10.7		
35-44	135	102.3± 10.5		
45 and above	62	102.7± 9.6		
Marital status				
Married	284	102.1± 10.7	1.05	0.352
Single	80	100.4± 9.6		
Separated from spouse/deceased	11	100.7 ± 9.8		
The school graduated from				
Middle school	6	102.0 ± 11.6	0.88	0.417

High school and equivalent	74	102.4 ± 10.9		
High school	297	101.0 ± 11.6		
Years of work				
0-9 years	129	101.5 ± 11.2	0.92	0.398
10-19 years	180	101.2± 10.0		
20 years and above	66	103.2 ± 9.9		
Total years of service				
0-9 years	131	101.8 ± 11.2	0.69	0.504
10-19 years	181	101.1± 10.0		
20 years and above	63	102.9 ± 9.9		
Years of service in office				
0-9 years	208	101.9± 10.2	0.94	0.393
10-19 years	134	100.8± 10.8		
20 years and above	33	103.2± 10.2		
Total	375	101.7 ± 10.4	-	-

When the communication skills scores were compared in the research group, no significant difference was found according to age, marital status, school graduated from, years of work, years of service and years of service in this position (p: 0.480, p: 0.352, p: 0.417, p: 0.398, p: 0.504 and p: 0.393, respectively).

4. DISCUSSION

Based on the findings obtained, although female employees had higher communication skills scores, there was no statistically significant difference in communication skills score averages by gender. A review of the literature reveals similar findings consistent with our study results (Atasayı and Yıldız, 2018; Gencer Çelik, 2021; Duran and Albayrak, 2020). When communication skills scores were compared by age, marital status, school attended, years of work experience, years of service, and years in the current position, no significant differences were found. A review of the literature shows that some studies do not align with our findings, though years of work experience produced similar results (Karadağ et al., 2015; Duran and Albayrak, 2020). Atasayı and Yıldız (2018) similarly found no significant differences between age, marital status, total years of work experience, duration in the current position, and the total and sub-dimensions of the communication skills inventory, aligning with the results of our study.

The primary research question found no significant difference in communication skills scores between secretaries working in the healthcare sector and those employed by municipalities, based on institutional score averages. Communication skills scores of those who wish to pursue the same profession were significantly higher than those who do not. Additionally, individuals with no intention of changing their occupation had significantly higher communication skills scores than those considering a different line of work. This finding can be explained by the fact that individuals who perform their work willingly and with enjoyment tend to place greater importance on the demands of the job.

As a result of the study conducted by Gencer Çelik (2021), it was observed that healthcare workers have low communication skills. At the same time, differences in communication skills were detected according to demographic characteristics. Considering the importance of communication in the healthcare sector, importance should be given to its development. In the study, although the communication skills scores of female employees in the research group were higher, no significant difference was detected in the mean communication skills scores based on gender.

In a study conducted by Karadağ et al. (2015) involving physicians and nurses, it was found that academic title, total duration of employment within the institution, and overall job satisfaction had a significant effect on the communication skills of physicians, while educational level was a significant factor for nurses. Additionally, age and total years in the profession were significant factors for both groups. In contrast, our study found no significant difference in communication skills based on age, school attended, years of service, total years of service, or years of service in the current position.

Kumcağız et al. (2011) conducted a study examining communication skills in nurses. As a result, they emphasized that communication skills should be given more importance and underlined that they should be developed in healthcare professionals. Duran and Albayrak (2020) determined that healthcare professionals' communication skills were moderate. They also emphasized that they could be improved with training. Considering previous studies, the study aimed to compare communication skills between healthcare professionals and other sector employees. There are many studies on healthcare professionals and healthcare students, and it was observed that students receiving healthcare education had a high awareness of communication skills (Erigüç & Eriş, 2013; Elkin et al., 2016). According to the institutions, the study's main question was whether there was a significant difference

between the communication skills scores of secretaries working in the health sector and those working in the municipality. Conducting the study more comprehensively in the health sector will contribute to the literature due to the importance that should be given to communication.

5. CONCLUSIONS

Municipalities are among the institutions that are intertwined with the public. Secretaries working in municipalities are essential in terms of communication. They ensure effective and efficient functioning in internal and external relations. Secretaries need to have developed communication skills for the flow of information, relations with citizens, coordination, and a professional image. Similarly, secretaries working in the health sector directly contact patients and their relatives. Healthcare workers also need to have high communication skills and provide effective communication. As a result, it was found in this study that there was no difference in the communication skills of secretaries working in the health sector and secretaries working in other (municipalities). In addition, it was determined that there were similarities and differences in the demographic or professional characteristics of the secretaries working in both institutions. In this research group, no significant difference was found regarding communication skills scores according to gender in both institutions.

In the research group, the communication skill scores of those who stated that they would choose the same profession were significantly higher than those who stated that they would not. However, when evaluated in terms of institutions, this difference was only present in municipality employees, while there was no significant difference in university hospital employees. Considering that the working conditions of the health sector are a challenging factor, it is necessary to support the motivation of employees, provide appropriate conditions to prevent possible trauma situations, and give more importance to communication.

In the research group, there is a significant difference in communication skill scores among those who do not have a different idea of doing business and among those who do not have this idea. However, this difference is only in municipality employees, not university hospital employees. Different results in different sectors show that it affects people's thoughts. It is possible that the fact that health workers continue to work under challenging conditions does not negatively affect their thoughts.

No significant difference was found in the research group regarding communication scores according to age, marital status, educational status, working years, and total service years. As a result, it would be beneficial to continue this study among different institutions and evaluate the results separately for each institution to eliminate the communication problems on an institutional basis.

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