



Research Article

Examination of Nurses' Attitudes About Patient Safety According to Sociodemographic Characteristics

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Abstract

Background: Patient safety is a high priority for healthcare systems worldwide. It is considered an indicator of the quality of care. Establishing a patient safety attitude is the first priority in order to create a patient safety culture. Nurses play a critical role in protecting and supporting patients because of the nature of their job. In this way, especially nurses' attitudes about patient safety will be determined, and threats to patient safety that may arise in the future will be prevented.

Methods: In this regard, this study aimed to examine the nurses' attitudes about patient safety according to certain sociodemographic characteristics. To accomplish this goal, the relevant data of the nurses were obtained by using the Patient Safety Attitude Scale consisting of 6 dimensions and 46 items. The research population consists of 245 nurses working in a University hospital in Ankara. The sample was not calculated, and a questionnaire was distributed to all employees of which 215 nurses completed the questionnaire. Data were collected between 1-30 April 2021. Ethics committee approval was obtained from the hospital. The data obtained were subjected to multivariate regression analysis.

Results: The scale used was reliable ($r=0.80$). The mean of the general patient safety attitude scale is 3.22 with a standard deviation of 0.54. The majority of the participants were found to be between the age groups of 19-26 (38.1%), women (84.7%), and single (52.1%). We also found that the weekly working time of nurses and whether they got patient safety training or no had a statistically significant effect on patient safety attitudes ($p<0.05$). Therefore, it could be said that as the working time of nurses increased, a decrease in patient safety attitudes were observed, and they exhibited more patient safety attitudes as they got patient safety training.

Conclusion: From this point of view, determining the weekly working hours of nurses more appropriately and making them more trained about patient safety may play a key role in creating a higher level of patient safety attitude.

Keywords: healthcare, nurse, patient safety, patient safety culture, patient safety attitude

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1. Introduction

The history of patient safety, which is not a new concept in healthcare, goes back to Hammurabi's laws, and patient safety is stated in Greek medicine as "first, do no harm." With the publication of the report titled "To err is human: Building a safer health system" by the Institute of Medicine (IOM), the issue of patient safety has attracted the attention of all stakeholders in the health sector (society, media, policy makers, etc.) [1]. In addition, in order to attract attention to the importance of patient safety, it has been revealed that 44,000-98,000 deaths per year are caused by preventable medical errors [2]. This situation has been supported by other studies. A study on patient safety found that wrong treatment in the health system was more than expected, with at least 100 patients dying every day as a result of medical errors [3]. In addition, it was also determined that those who provided these services were aware of this situation and believed that there were medical errors in 34% in the USA, 30% in Canada, 27% in Australia, 23% in Germany, and 22% in England [4]. In another study, it was stated that more people died from medical errors relatively due to highway accidents, breast cancer, or AIDS within a year [5].

It is very important to ensure patient safety in the quality of healthcare service delivery. Ensuring that patients receive services in a safe environment and away from all harmful situations is not only the responsibility of the hospital management but also of the healthcare professionals [6].

The concept of patient safety is defined by the World Health Organization (WHO) as the absence of irreversible harm to the patient in the process of healthcare service and minimizing the risk of unnecessary harm related to healthcare [7]. Certain approaches should be adopted to ensure patient safety at the desired level. The most important of these is that employees report their mistakes without fear or hesitation, and they are encouraged in this regard [8]. In a study, it was stated that employees who experienced negativity due to an error they caused will be less willing to report an error that may occur later [9]. In addition, it is stated that the positive attitudes and behaviors of the managers and colleagues in the work environment significantly contributed to the employees reporting their mistakes [6].

Nurses, who are among the most important healthcare professionals in patient care, are responsible for protecting the patients from all possible dangers, preventing or minimizing the negative consequences that may occur in the procedures and treatments applied to the patient at every stage of service provision. While nurses fulfill their responsibilities, they should be careful about the elements that harm patient safety and

take care to protect and improve patient safety [6]. The way to achieve this is to create a good patient safety culture [10]. Patient safety culture is a multidimensional concept defined as a product of individual and group behaviors, values, attitudes, perceptions, competencies, and standards that determine the commitment, style, and competence of management in managing patient safety in the context of healthcare. Moreover, it is used as a management tool in the healthcare industry and is promoted by health policy makers and managers around the world [11].

However, before establishing a patient safety culture, it is necessary to determine the attitudes of healthcare professionals such as nurses toward patient safety and to decide on the necessary strategies to create a safety culture. In this respect, attitude studies are of great importance. Attitude studies are carried out for the purposes of learning the attitudes of individuals in a certain time unit, predicting their future behavior, detecting negative conditions in advance and eliminating them, and preventing negative behaviors, especially by taking necessary measures in administrative matters. Managers must know the attitudes of the people they work with and under their management toward the system, the rules, and themselves. Thus, managers may take some precautions to predict and control the behavior of these people [6].

In this context, within the scope of this study, factors affecting the patient safety attitudes of nurses, who constitute an important professional group in terms of quantity and quality of the service they provide, will be examined.

2. Materials and Methods

This study aimed to examine the patient safety attitudes of nurses, who have an important place in the provision of healthcare services.

Establishing a patient safety culture is strongly recommended by IOM. Establishing a patient safety culture depends on improving patient safety attitudes. In this respect, this research is important in terms of revealing the patient safety attitudes of nurses.

The research population consists of 245 nurses working in a University hospital in Ankara, Turkey. Within the scope of the study, the sample size was not calculated and a questionnaire was distributed to all employees and 215 nurses agreed to participate in the survey. Therefore, the research was conducted with the participation of 215 employees (88%). Data were collected between 1-30 April 2021. Ethics committee approval was obtained from the hospital Ethics Committee. Nurses participated in the study voluntarily.

A questionnaire consisting of two parts was used in this study. The first part of this form consists of 9 questions that contain sociodemographic information (age, gender, marital status, education level, working unit, shift format, weekly working time (hours), administrative position status, and patient safety training status) of the participants. The second part of the questionnaire, the “Patient Safety Attitude Scale,” which consists of 46 questions, was developed by Sexton *et al.* [12] and validated and reliable in Turkish by Baykal *et al.* [6].

The five-point Likert-type scale is scored as “5- strongly agree” and “1- strongly disagree,” and some items of the scale are scored negatively. The patient safety attitude scale consists of 6 sub-dimensions (job satisfaction, teamwork, safety climate, management approach, stress identification, and working conditions). The correlation values of the scale according to the total scores are between 35 and 58. The total scale Cronbach alpha value is 0.93 and the sub-dimension Cronbach alpha values are 0.85, 0.86, 0.83, 0.77, 0.74, and 0.72, respectively.

The data obtained within the scope of the research were subjected to multivariate regression analysis. In this way, the effect of many independent variables on patient safety attitude can be examined statistically.

3. Results

TABLE 1: Reliability coefficients of the scale.

Dimensions	Cronbach's Alpha (r)
Job satisfaction	0.71
Teamwork	0.69
Safety climate	0.67
Management approach	0.69
Stress identification	0.88
Working conditions	0.73
General	0.80

It was seen that the scale used according to Table 1 is reliable ($r=0.80$). In addition, when examined in terms of dimensions, it was found that the highest reliability coefficient was obtained in the “stress identification ($r=0.88$)” dimension and the lowest reliability coefficient was obtained in the “safety climate ($r=0.67$)” dimension. Therefore, it was seen that both the scale and scale dimensions in general had a sufficient score for reliability [13, 14].

TABLE 2: Descriptive statistics of the participants.

Variables		Number	Percentage (%)
Age (yr)	19–26	82	38.1
	27–34	52	24.2
	35–42	46	21.4
	43–51	35	16.3
Gender	Woman	182	84.7
	Male	33	15.3
Marital status	Married	103	47.9
	Single	112	52.1
Education level	High school	69	32.1
	Associate degree and above	146	67.9
Working unit	Policlinic	79	36.7
	Clinic	136	63.3
Shift format	Day shift + night shift	160	74.4
	Day shift only	32	14.9
	Night shift only	23	10.7
Weekly working time (hr)	40–45	134	62.3
	46–56	81	37.7
Administrative position status	Yes	21	9.8
	No	194	90.2
Patient safety training status	Yes	177	82.3
	No	38	17.7

Descriptive statistics of the participants are presented in Table 2. Accordingly, the majority of the participants were found to be aged between 19-26 (38.1%), women (84.7%), single (52.1%), associate degree or higher educated (67.9%), clinical staff (63.3%), working day + night shifts (74.4%), working 40-45 hours a week (62.3%); does not have an administrative duty (90.2%); got training on patient safety (82.3%).

TABLE 3: Statistics on patient safety attitude scale.

Dimensions	Mean	Standard deviation	Number
Job satisfaction	2.91	0.91	215
Teamwork	3.48	0.62	215
Safety climate	3.35	0.75	215
Management approach	3.41	1.08	215
Stress identification	3.01	0.85	215
Working conditions	3.15	0.66	215
General	3.22	0.54	215

According to Table 3, the mean of the general patient safety attitude scale is 3.22 with a standard deviation of 0.54. On the basis of dimensions, it was concluded that the teamwork dimension had the highest average of 3.48 and the job satisfaction dimension had the lowest average of 2.91.

Table 4 contains the regression analysis results. Considering the general model of the study, it was found that the established model was statistically significant ($p < 0.05$). Accordingly, it was determined that the weekly working time has a negative effect on the patient safety attitude, and the patient safety training status had a positive effect on the patient safety attitude ($p < 0.05$). That is, as the weekly working time of the nurses increased, their patient safety attitudes decreased. It was determined that those who got patient safety training had higher patient safety attitudes than those who did not. In addition, when Table 4 was examined on the basis of dimensions, it was found that the models established for all dimensions were statistically significant ($p < 0.05$).

When the VIF values of all models established within the scope of the research were examined, it was understood that the values are in the normal range ($VIF < 10$) and; therefore, there was no multicollinearity problem between the variables. In addition, the Durbin-Watson value was used to test whether the autocorrelation between variables was in the normal range (1.5-2.5); however, no autocorrelation problem was observed.

4. Discussion

This study aimed to examine the effect of sociodemographic characteristics on the patient safety attitudes of nurses, who have an important place in healthcare services delivery. When the general model established within the scope of the study was examined, it was seen that the weekly working time variable had an effect on the general patient safety attitudes of nurses. Accordingly, it was found that as the weekly working time increases, the patient safety attitude levels of nurses decreases. With the increase in the weekly working time, factors such as stress level, workload, insomnia, or fatigue may increase, which may cause employees not to pay the necessary attention to their work, difficulty in concentrating on their work, and making mistakes. This situation is thought to explain the negative relationship between weekly working hours and patient safety attitude. Similar to the results of this study, Rogers *et al.* [15] found that the patient safety level decreased as the working time increased in a study conducted on nurses. Similarly, in the study conducted by Son *et al.* [16] on nurses, it was stated that there was a negative relationship between weekly working time and patient safety competence levels, and patient safety competence level decreased as the duration of the disease

TABLE 4: Patient safety attitude regression analysis statistics.

Dimensions	Variables	Standardized beta coefficient	t	P-value	VIF	F	P-value	R ²	Durbin-Watson
Job satisfaction	Age	-0.165	-1.666	0.097	2.367	3.862	0.001	0.16	2.202
	Gender (female)	-0.234	-3.253	0.001	1.255				
	Marital status (married)	-0.031	-0.358	0.720	1.830				
	Education level (high school)	-0.142	-2.016	0.045	1.210				
	Working unit (clinic)	-0.118	-1.698	0.091	1.180				
	Shift format (day shift only)	0.074	1.067	0.287	1.175				
	Weekly working time	-0.212	-2.783	0.006	1.414				
	Administrative position status (yes)	-0.112	-1.597	0.112	1.185				
	Patient safety training status (yes)	0.135	1.863	0.064	1.266				
Teamwork	Age	0.152	1.497	0.136	2.367	2.461	0.008	0.11	2.235
	Gender (female)	-0.035	-0.470	0.639	1.255				
	Marital status (married)	0.279	3.122	0.002	1.830				
	Education level (high school)	-0.087	-1.198	0.232	1.210				
	Working unit (clinic)	-0.102	-1.416	0.158	1.180				
	Shift format (day shift only)	0.204	2.850	0.005	1.175				
	Weekly working time	-0.147	-1.868	0.063	1.414				
	Administrative position status (yes)	0.105	1.452	0.148	1.185				
	Patient safety training status (yes)	0.171	2.295	0.023	1.266				
Safety climate	Age	-0.151	-1.489	0.138	2.2370	2.581	0.004	0.12	2.214
	Gender (female)	-0.079	-1.058	0.291	1.285				
	Marital status (married)	-0.097	-1.079	0.282	1.856				
	Education level (high school)	-0.071	-0.982	0.327	1.211				
	Working unit (clinic)	0.001	0.011	0.992	1.187				
	Shift format (day shift only)	0.059	0.437	0.663	4.200				

TABLE 4: (Continued).

Dimensions	Variables	Standardized beta coefficient	t	P-value	VIF	F	P-value	R ²	Durbin-Watson
	Weekly working time	-0.236	-3.016	0.003	1.414				
	Administrative position status (yes)	0.170	2.271	0.024	1.304				
	Patient safety training status (yes)	0.177	2.372	0.019	1.284				
Management approach	Age	-0.016	-0.167	0.868	2.370	4.975	0.001	0.21	2.281
	Gender (female)	0.021	-0.294	0.769	1.285				
	Marital status (married)	-0.111	-1.308	0.192	1.856				
	Education level (high school)	-0.119	-1.736	0.084	1.211				
	Working unit (clinic)	-0.014	-0.212	0.832	1.187				
	Shift format (day shift only)	0.058	0.458	0.647	4.200				
	Weekly working time	-0.281	-3.798	<0.001	1.414				
	Administrative position status (yes)	0.170	2.384	0.018	1.304				
	Patient safety training status (yes)	0.174	2.469	0.014	1.284				
Stress identification	Age	0.526	5.877	<0.001	2.370	4.437	0.001	0.31	1.928
	Gender (female)	0.250	3.792	<0.001	1.285				
	Marital status (married)	0.099	1.248	0.213	1.856				
	Education level (high school)	0.148	2.315	0.022	1.211				
	Working unit (clinic)	0.031	0.496	0.621	1.187				
	Shift format (day shift only)	0.256	2.150	0.033	4.200				
	Weekly working time	0.118	1.705	0.090	1.414				
	Administrative position status (yes)	0.149	2.252	0.025	1.304				
	Patient safety training status (yes)	0.219	3.323	0.001	1.284				

TABLE 4: (Continued).

Dimensions	Variables	Standardized beta coefficient	t	P-value	VIF	F	P-value	R ²	Durbin-Watson
Working conditions	Age	-0.257	-2.545	0.012	2.370	2.616	0.004	0.12	2.427
	Gender (female)	-0.139	-1.865	0.064	1.285				
	Marital status (married)	-0.233	-2.602	0.010	1.856				
	Education level (high school)	-0.070	-0.975	0.331	1.211				
	Working unit (clinic)	0.042	0.585	0.559	1.187				
	Shift format (day shift only)	0.280	2.084	0.038	4.200				
	Weekly working time	-0.211	-2.696	0.008	1.414				
	Administrative position status (yes)	0.008	0.103	0.918	1.304				
	Patient safety training status (yes)	0.074	0.989	0.324	1.284				
	General	Age	-0.003	-0.030	0.976	2.370	2.416	0.008	0.17
Gender (female)		-0.099	-1.322	0.188	1.285				
Marital status (married)		-0.007	-0.072	0.942	1.856				
Education level (high school)		-0.114	-1.570	0.118	1.211				
Working unit (clinic)		-0.066	-0.913	0.362	1.187				
Shift format (day shift only)		0.112	0.831	0.407	4.200				
Weekly working time		-0.262	-3.332	0.001	1.414				
Administrative position status (yes)		0.108	1.439	0.152	1.304				
Patient safety training status (yes)		0.166	2.216	0.028	1.284				

increased. In the study conducted by Griffiths *et al.* [17], it was found that nurses with high working hours are more likely to exhibit a low-patient safety attitude. In the study conducted by Jarrar *et al.* [18], it was found that there was a negative relationship between the weekly working time of nurses and their patient safety attitude levels. In the study conducted by Filiz[19] on healthcare workers, it was found that long working hours reduced the patient safety attitudes of the employees. Similar to the results of

all these studies, it has been observed in the literature that there are many different studies stating that the increase in weekly working hours increases the possibility of encountering errors or adverse events that threaten patient safety [20-27].

According to the general model established in the study, another variable that had an effect on the patient safety attitudes of nurses was patient safety education. Accordingly, it was found that nurses who got patient safety training had higher patient safety attitude levels than nurses who did not get training. Therefore, increase in the knowledge and awareness about patient safety for nurses is vital in healthcare service delivery. This can be explained by the employees taking more care in their attitudes and behaviors that concern patient safety. Similarly, in the study conducted by Teleki *et al.* [28], it was observed that patient safety education had a positive effect on establishing a patient safety culture and reducing medical errors. In the study conducted by Balçım *et al.* [29], it was found that the patient safety levels of nurses who got training on patient safety were higher. Differing from the findings of these studies, in the study conducted by Demirel *et al.* [30] it was found that there was no statistically significant difference between the patient safety attitudes of healthcare workers who received training on patient safety.

Regression models were also established for each subdimension of the patient safety attitude scale within the scope of the study. When these models were examined, the factors affecting the job satisfaction subdimension were gender, education level, and weekly working time; factors affecting the teamwork subdimension were marital status, working style, and patient safety education status; factors affecting the security climate and management understanding subdimensions were weekly working hours, administrative duty status, and patient safety training; factors affecting the stress definition subdimension were education level, working style, administrative duty status, and patient safety training; factors affecting working conditions subdimension were age, marital status, type of work, and weekly working time.

5. Limitations

This study has some limitations. First, it was done only on nurses. Second, it was done in only one hospital. Finally, only certain variables were used. Since the research was conducted on nurses working only in one hospital, caution should be exercised in generalizing the results of this study to nurses working in other hospitals. Therefore, studies involving more hospitals are recommended in the future. In this way, it will be

possible to examine the effect of not only individual characteristics but also organizational characteristics (such as institutional ownership and number of beds) on patient safety attitudes of nurses as in this study. These factors should be considered when making the assessment.

6. Conclusion

According to this study, considering that the variable that has the most impact on the patient safety attitudes of nurses is the weekly working time ($\beta=-0.262$), it is recommended that hospital managers rearrange their working time and especially take care not to exceed 40 weekly working hours. In this way, the workload of nurses with very high weekly working hours can be reduced, and thus patient safety attitudes can be increased. Again, according to another result of this study, nurses who received training on patient safety had higher patient safety attitudes. According to this result, hospital managers should make it compulsory to get training on patient safety for all staff, especially nurses who have not been trained on patient safety before and who have a high weekly working time, and continue to provide training at regular intervals. In addition, managers and policy makers should allocate more resources to the training of nurses on this subject for a safer healthcare service delivery process, and increase patient safety culture and awareness.

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Ethical Considerations

First, approval was obtained from the University hospital in order to conduct the study. Then, the approval of each participant stating that they voluntarily participated in the study was obtained. Finally, the questionnaire was applied to the participants.

Competing Interests

The authors declare that there is no conflict of interest.

Availability of data and material

The data that support the findings of this study are available from the corresponding author.

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References

- [1] Yılmaz, A., Işık, O., & Akca, N. (2017). The level of hospital employees' patient safety attitude perception determined. *Hacettepe Journal of Health Administration*, *20*(1), 69–80.
- [2] IOM (Institute of Medicine). (2000). *To err is human: building a safer health system* (Vol. 6). National academy press.
- [3] Çiftlik, E., Kesmezacar, O., Kurt, M. (2010). Perception of the patient safety culture training and research hospitals and in state hospitals. In: H. Kirilmaz (Ed.), *The 2nd international congress on quality and performance in healthcare proceeding book* (pp. 3–11). Ankara: Baydan Publishing.
- [4] Tunçer Ünver, G., & Harmanci Seren, A. K. (2018). Defining the patient safety attitudes and influencing factors of health professionals working at maternity hospitals. *Journal of Nursing Management*, *26*(5), 579–586. <https://doi.org/10.1111/jonm.12585>
- [5] Sammer, C. E., Lykens, K., Singh, K. P., Mains, D. A., & Lackan, N. A. (2010). What is patient safety culture? A review of the literature. *Journal of Nursing Scholarship*, *42*(2), 156–165. <https://doi.org/10.1111/j.1547-5069.2009.01330.x>
- [6] Baykal, U., Sahin, N. H., & Altunas, S. (2020). Turkish adaptation of patient safety attitude questionnaire. *Journal of Education and Research in Nursing*, *7*(1), 39–46.
- [7] WHO. (2019). *Patient safety*. <https://www.who.int/patientsafety/en/>. Accessed on 21.02.2019.
- [8] Wolf, Z. R., Serembus, J. F., Smetzer, J., Cohen, H., & Cohen, M. (2000). Responses and concerns of healthcare providers to medication errors. *Clinical Nurse Specialist CNS*, *14*(6), 278–287. <https://doi.org/10.1097/00002800-200011000-00011>
- [9] Uribe, C. L., Schweikhart, S. B., Pathak, D. S., Dow, M., & Marsh, G. B. (2002). Perceived barriers to medical-error reporting: An exploratory investigation. *Journal*

of Healthcare Management, 47(4), 263–279. <https://doi.org/10.1097/00115514-200207000-00009>

- [10] Karaca, A., & Arslan, H. (2014). A study for evaluation of patient safety culture in nursing services. *Journal of Health and Nursing Management*, 1(1), 9–18. <https://doi.org/10.5222/SHYD.2014.009>
- [11] Reis, C. T., Paiva, S. G., & Sousa, P. (2018). The patient safety culture: A systematic review by characteristics of hospital survey on patient safety culture dimensions. *International Journal for Quality in Health Care*, 30(9), 660–677. <https://doi.org/10.1093/intqhc/mzy080>
- [12] Sexton, J. B., Helmreich, R. L., Neilands, T. B., Rowan, K., Vella, K., Boyden, J., Roberts, P. R., & Thomas, E. J. (2006). The safety attitudes questionnaire: Psychometric properties, benchmarking data, and emerging research. *BMC Health Services Research*, 6(1), 44. <https://doi.org/10.1186/1472-6963-6-44>
- [13] Griethuijsen, R. A. L. F., Eijck, M. W., Haste, H., den Brok, P. J., Skinner, N. C., Mansour, N., Gencer, A. S., & BouJaoude, S. (2014). Global patterns in students' views of science and interest in science. *Research in Science Education*, 45(4), 581–603. <https://doi.org/10.1007/s11165-014-9438-6>
- [14] Nehring, A., Nowak, K. H., Belzen, A. U., & Tiemann R. (2015). Predicting students' skills in the context of scientific inquiry with cognitive, motivational, and sociodemographic variables. *International Journal of Science Education*, 37(9), 1343–1363. <https://doi.org/10.1080/09500693.2015.1035358>
- [15] Rogers, A. E., Hwang, W. T., Scott, L. D., Aiken, L. H., & Dinges, D. F. (2004). The working hours of hospital staff nurses and patient safety. *Health Affairs (Project Hope)*, 23(4), 202–212. <https://doi.org/10.1377/hlthaff.23.4.202>
- [16] Son, Y. J., Lee, E. K., & Ko, Y. (2019). Association of working hours and patient safety competencies with adverse nurse outcomes: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 16(21), 4083–4094. <https://doi.org/10.3390/ijerph16214083>
- [17] Griffiths, P., Dall'Ora, C., Simon, M., Ball, J., Lindqvist, R., Rafferty, A. M., Schoonhoven, L., Tishelman, C., Aiken, L. H., & the RN4CAST Consortium. (2014). Nurses' shift length and overtime working in 12 European countries: The association with perceived quality of care and patient safety. *Medical Care*, 52(11), 975–981. <https://doi.org/10.1097/MLR.0000000000000233>
- [18] Jarrar, M., Minai, M. S., Al-Bsheish, M., Meri, A., & Jaber, M. (2019). Hospital nurse shift length, patient-centered care, and the perceived quality and patient safety.

The International Journal of Health Planning and Management, 34(1), e387–e396.
<https://doi.org/10.1002/hpm.2656>

- [19] Filiz, E. (2009). Determining the perception of patient safety culture in the hospital and the attitude of healthcare professionals and society towards patient safety. Doctoral dissertation, Selcuk University, Konya.
- [20] Landrigan, C. P., Rothschild, J. M., Cronin, J. W., Kaushal, R., Burdick, E., Katz, J. T., Lilly, C. M., Stone, P. H., Lockley, S. W., Bates, D. W., & Czeisler, C. A. (2004). Effect of reducing interns' work hours on serious medical errors in intensive care units. *The New England Journal of Medicine*, 351(18), 1838–1848. <https://doi.org/10.1056/NEJMoa041406>
- [21] Clarke, S. P. (2007). Hospital work environments, nurse characteristics, and sharps injuries. *American Journal of Infection Control*, 35(5), 302–309. <https://doi.org/10.1016/j.ajic.2006.07.014>
- [22] Dembe, A. E., Erickson, J. B., Delbos, R. G., & Banks, S. M. (2005). The impact of overtime and long work hours on occupational injuries and illnesses: New evidence from the United States. *Occupational and Environmental Medicine*, 62(9), 588–597. <https://doi.org/10.1136/oem.2004.016667>
- [23] Keller, S. M., Berryman, P., & Lukes, E. (2009). Effects of extended work shifts and shift work on patient safety, productivity, and employee health. *American Association of Occupational Health Nurses (AAOHN) Journal*, 57(12), 497–502. <https://doi.org/10.1177/216507990905701204>
- [24] Olds, D. M., & Clarke, S. P. (2010). The effect of work hours on adverse events and errors in health care. *Journal of Safety Research*, 41(2), 153–162. <https://doi.org/10.1016/j.jsr.2010.02.002>
- [25] Caruso, C. C. (2014). Negative impacts of shiftwork and long work hours. *Rehabilitation Nursing*, 39(1), 16–25. <https://doi.org/10.1002/rnj.107>
- [26] Di Muzio, M., Dionisi, S., Di Simone, E., Cianfrocca, C., Di Muzio, F., Fabbian, F., Barbiero, G., Tartaglino, D., & Giannetta, N. (2019). Can nurses' shift work jeopardize the patient safety? A systematic review. *European Review for Medical and Pharmacological Sciences*, 23(10), 4507–4519.
- [27] Chao, W. Y., Chen, S. C., Geerdes, E., Hsiung, J.-C., Li, C.-H., Lee, C.-C., Tanoue, H., & Yamazaki, M. (2019). Long working hour related medical errors and patient outcomes among physicians: A systematic review. *Emergency Medicine Open Journal (EMOJ)*, 4(1), 25–35. <https://doi.org/10.17140/EMOJ-4-151>
- [28] . Teleki, S. S., Damberg, C. L., Sorbero, M. E., Shaw, R. N., Bradley, L. A., Quigley, D. D., Fremont, A. M., & Farley, D. O. (2009). Training a patient safety work force: The

patient safety improvement corps. *Health Services Research*, 44(2p2), pp. 701-716.

- [29] Balçık Akman, A. (2010). *A study to evaluate the factors affecting the culture of patient safety and the perceptions of nurses working in a university hospital about patient safety culture*. Master's thesis, Istanbul University, Istanbul.
- [30] Demirel, G., Akgün, Ö., & Doğaner, A. (2020). A The effect of patient safety attitudes and cultures on medical errors of intern students. *Acıbadem University Health Sciences Journal*, 11(2), 276–283.