

Oral and Dental Health Knowledge of Nursing and Midwifery Students

Hemşirelik ve Ebelik Öğrencilerinin Ağız Diş Sağlığı Konusunda Bilgi Düzeyleri

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Abstract

Objective: The objective of this study was to determine Oral and Dental Health (ODH) knowledge of nursing and midwifery students.

Methods: This descriptive-type study was conducted on 281 nursing and 200 midwifery students studying at the faculty of health sciences of a state university in İstanbul. Data were collected through a descriptive information form that included ODH behaviors and sociodemographic characteristics of students and an information test regarding students' knowledge of oral and dental health issues. The forms were prepared by the investigators based on the literature. Descriptive statistical analyses and chi-square tests were used to analyze the data.

Results: The mean age of the students was 20.47±1.50 years, and there were 428 (89%) female and 53 (11%) male respondents. A total of 280 (58.2%) of the students had previously received information about ODH, and 170 (35.3%) of all the students claimed that they had obtained information about ODH from the Internet. It was interesting to note that only 68 (14.1%) of the students had regular dental check-ups. The average of accurately answered questions was 59.09% in the information test. "How many times a day should teeth be brushed?" (97.5%) was the question that was the most frequently answered accurately, followed by "Who might have periodontal diseases?" (96.3%). The questions with the lowest percentages of accurate responses were "What is the right age to start brushing children's teeth?" (11%) and "Which childhood diseases occurring in pregnancy affect the development of children's teeth?" (15.8%).

Conclusion: It was concluded that students generally had insufficient ODH knowledge, and this finding indicates the necessity of including ODH programs in the education of healthcare professionals.

Keywords: Oral and dental health, midwifery, nursing, university students

Öz

Amaç: Bu çalışmanın amacı ebelik ve hemşirelik öğrencilerinin ağız diş sağlığı konusundaki bilgi düzeylerini belirlemektir.

Yöntemler: Tanımlayıcı tipteki bu çalışma, İstanbul ilindeki bir devlet üniversitesinin sağlık bilimleri fakültesi hemşirelik ve ebelik bölümlerinde öğrenim gören, çalışmaya katılmayı gönüllü olarak kabul eden 281 hemşirelik ve 200 ebelik öğrencisi ile gerçekleştirilmiştir. Veriler araştırmacılar tarafından literatür doğrultusunda hazırlanan, öğrencilerin demografik özelliklerini, ağız diş sağlığına ilişkin davranış ve görüşlerini içeren Tanıtıcı Bilgi Formu ve öğrencilerin ağız diş sağlığı konusundaki bilgi düzeylerini belirlemeye ilişkin Bilgi Testi ile toplanmıştır. Verilerin değerlendirilmesinde, tanımlayıcı istatistiksel analizler ve ki-kare testi kullanılmıştır.

Bulgular: Öğrencilerin yaş ortalaması 20,47±1,50 olup, 428'i kadın (%89), 53'ü erkektir (%11). Katılımcıların 280'i (%58,2) daha önce ağız diş sağlığı konusunda bilgi aldığını belirtmiştir. Tüm katılımcıların 170'i (%35,3) ağız diş sağlığı ile ilgili bilgilere ulaşmada bilgi kaynağı olarak interneti kullandığını bildirmiştir. Öğrencilerin sadece 68'i (%14,1) düzenli olarak diş hekimi kontrolüne gittiğini belirtmiştir. Bilgi testindeki tüm soruların ortalama doğru cevaplanma yüzdesi %59,09'dur. Sonuçlara göre en sık olarak doğru cevaplanan, %97,5 ile "Dişler günde kaç kez fırçalanmalıdır?" sorusu olup bunu %96,3 ile "Diş eti hastalıkları kimlerde görülür?" sorusu takip etmektedir. En düşük oranda doğru yanıtlanan soru ise %11 ile "Çocuklarda diş fırçalamaya ilk ne zaman başlanmalıdır?" olup bunu %15,8 ile "Hamilelikte geçirilen hangi çocukluk çağı hastalığı diş gelişimini etkiler?" sorusu izlemektedir.

Sonuç: Çalışmaya katılan öğrencilerin ağız diş sağlığı konusunda yeterli bilgiye sahip olmadığı saptanmıştır. Bu sonuç, ileride profesyonel sağlık hizmeti verecek olan hemşirelik ve ebelik öğrencilerinin eğitim programlarında ağız diş sağlığı konusunun yer alması gerekliliğini göstermektedir.

Anahtar Kelimeler: Ağız diş sağlığı, ebelik, hemşirelik, üniversite öğrencileri

INTRODUCTION

Oral and Dental Health (ODH) problems are considered a common public health issue and as a serious continuing problem, particularly in low-income countries (1, 2). The ODH problems may occur in various stages of life from infancy to old age. Because ODH is an important part of general health, it significantly affects quality of life. Systemic diseases such as diabetes, cardiovascular diseases, respiratory system diseases, cancer, rheumatoid arthritis, and pregnancy complications are closely associated with ODH. The World Health Organization (WHO), therefore, recommends the inclusion of educational programs to promote ODH in health promotion programs for chronic diseases (3, 4).

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Global epidemiological research conducted by the WHO demonstrates that almost 100% of adults have tooth decay, with the highest DMF-T scores (Decayed, Missing, Filled-Teeth) (DMF-T=14) in individuals aged 35-44 years. The prevalence of caries in children is increasing in developing countries and is decreasing in developed countries. While severe periodontitis is found in 5-20% of the adult population worldwide, children and adolescents mostly have signs of gingivitis, and aggressive periodontitis affects only about 2% of youth (5).

Considering all age groups in Turkey, 92 out of 100 people need dental treatment for tooth decay (6). As another important ODH issue, periodontal diseases, have a prevalence of 50% at 10 years of age, rising up to 96% at adult age. Despite the high prevalence of ODH problems, almost all of them are preventable (7, 8).

Based on Health Education in Turkey and the Manpower in Health Status Report released in 2014, the number of active dentists in Turkey is 27.230, with a great majority operating in three major cities (9). The number of dentists is very low in some regions based on the distribution of dentists across Turkey. Dental check-ups and treatments can be limited due to several reasons such as global economic problems, accessibility, awareness, priority, and number of dentists (10).

Pediatric nurses working in neonatal units, community health, and private and outpatient clinics have a unique opportunity for early diagnosis of ODH issues during routine check-ups to create a positive change in early childhood caries, which is a common problem in children. Neonatal nurses inform parents on infant feeding, bathing, umbilical cord, and recognition of disease symptoms (11). From this perspective, neonatal nurses are ideally suited for parents' training on ODH. The American Academy of Pediatric Dentistry (AAPD) advises that oral and dental care for newborns should start by focusing on maternal ODH care in check-ups during prenatal period (12). Nurses are more accessible healthcare professionals, having a close relation with pregnant women and children. However, studies indicate that nurses have limited education or no education at all on ODH and have insufficient knowledge in this regard (13-15).

Similarly, midwives also have a unique opportunity for motivating mothers to change their oral and dental care habits as part of their close relation with them before and during delivery. All prenatal care providers (e.g., midwives and nurses) are globally advised to provide oral and dental care training before and in early stages of pregnancy, to assess the current situation, and to offer directions to mothers (16-18).

Prior to the adoption of the family medicine model in the primary healthcare system in Turkey, pregnancy, infant, and child follow-up as well as health training were primarily assumed by midwives/nurses through home visits. In the current healthcare system based on the family medicine model, it must be noted that nurses and midwives are still quite effective in the prevention of early childhood caries (19).

Accordingly, the aim of this study was to determine ODH knowledge levels of nursing and midwifery students.

METHODS

Type of Study

The study is of a descriptive type.

Population and Sample

The population of the study consisted of 1.120 students studying at nursing (846 students) and midwifery (274 students) departments in the faculty of health sciences of a state university in İstanbul. A total of 481 (42.9%) students, including 281 nursing and 200 midwifery students, agreed to take part in this study and constituted the sample. The study was conducted from February 2015 to May 2015.

Data Collection Tools

The data were collected through a *Descriptive Information Form* and an *Information Test* prepared by the investigators based on the literature (6, 20, 21). While the *Descriptive Information Form* included questions about demographic characteristics of students and their behaviors and opinions on ODH, the *Information Test* consisted of 20 multiple-choice items to determine the ODH knowledge levels of the students (e.g., the total number of permanent and primary teeth, eruption times, effect of antibiotic usage on teeth, etiology of dental decay, and symptoms of periodontal diseases). After explaining the objective of the study, the data-collection instruments were distributed to the students to fill out under supervision.

Statistical Analysis

Data were analyzed with percentages, means, and chi-square tests in the computing environment. The results were assessed with a confidence interval of 95% and a significance level of $p < 0.05$. In our study, independent variables were gender, department, school year, graduated high school, father's level of education, and mother's level of education, and the dependent variable was the ODH knowledge of the participants.

Ethical Aspects of the Study

Ethics committee approval (26.01.2015-18) and written consent of the relevant institution's management were obtained to conduct the study. Furthermore, after providing information about the study, oral consents of students who agreed to take part in the study were also obtained.

RESULTS

The mean age of the students was 20.47 ± 1.50 years. Of the students, 89% were female, 52.8% were general high school graduates, 58.4% were nursing students, 38% were second-year students, 53.8% had a primary school-graduate father and 62.6% had a primary school-graduate mother (Table 1).

Only 14.1% of the students in the study stated that they have regular dental check-ups. The most frequent response to the question "What are your ODH problems?" was dental caries (50.9%) followed by sensitivity (39.3%), gum problems (23.3%), halitosis (12.3%), and clenching (15.4%). Students stated that they accessed information on ODH through the Internet (35.3%), dentist (22.2%), and TV/magazine (21.2%) (Table 2).

Table 1. Socio-demographic characteristics of the students (n=481)

Characteristics	n	%
Sex		
Female	428	89
Male	53	11
Graduated high school		
General high school	254	52.8
Vocational high school	27	5.6
Science high school	37	7.7
Private high school	19	4
Anatolian high school	144	29.9
Department		
Nursing	281	58.4
Midwifery	200	41.6
School year		
First year	99	20.7
Second year	183	38
Third year	131	27.2
Forth year	68	14.1
Father's level of education		
Illiterate	17	3.5
Literate	20	4.2
Primary education	259	53.8
High school	118	24.5
University	67	14
Mother's level of education		
Illiterate	63	13.1
Literate	36	7.5
Primary education	301	62.6
High school	66	13.7
University	15	3.1

Furthermore, out of 481 students in the study, 344 students (71.5%) stated that they wanted to have training on ODH. In response to the query of their recommendations in this regard, 90 (18.9%) students recommended its inclusion in the education curriculum, 35 (7.4%) students recommended an elective course, and 33 (6.9%) students recommended a dentist conference.

Given the responses to the questions, the question that was most frequently answered accurately was "How many times a day should teeth be brushed?" (97.5%) followed by "Who might have periodontal diseases?" (96.3%) and "Which of the given factors are included in tooth decay etiology?" (92.3%). The questions with the lowest percentage of accurate response were "What is the right age to start brushing children's teeth?" (11%), "Which childhood disease occurring in pregnancy affect the development of children's teeth?" (15.8%) and "What is the total number of primary teeth in children?" (29.9%) (Table 3).

Table 2. Students' oral and dental health behaviors, oral and dental health problems and access to information (n=481)

	n	%
Regular dental check-up		
Yes	68	14.1
No	413	85.9
Oral and dental health problems*		
Dental caries	245	50.9
Gum problems	112	23.3
Sensitivity	189	39.3
Halitosis	59	12.3
Clenching	74	15.4
Access to information		
Internet	170	35.3
Dentist	107	22.2
TV, magazine	102	21.2
Congress, conference	13	2.8
During education	89	18.5

*Multiple choices were marked.

The questions "How often should you change your toothbrush?" and "Which of the following is not a symptom of tooth eruption in infants?" were answered correctly by female students (81.8% and 78.3%) more often compared to male students (67.9% and 52.8%) with statistical significance ($p < 0.05$ and $p < 0.01$, respectively). Nursing students (58.7%) answered the question "Which of the following antibiotics causes teeth discoloration?" correctly more often compared to midwifery students (43%) with statistical significance ($p < 0.01$) (Table 4).

The question "Which of the followings is not a symptom of periodontal diseases?" was answered correctly by 81.8% of first-year students, 77.6% of second-year students, 77.9% of third-year students, and 88.2% of fourth-year students with no significant difference between the percentage of accurate answers ($p > 0.05$) (Table 4).

The question "How long should you brush your teeth?" was answered correctly by 78.7% of general high school graduates, 88.9% of vocational high school graduates, 83.8% of science high school graduates, 63.2% of private high school graduates, and 84% of Anatolian high school graduates with no significant difference between the percentage of accurate answers ($p > 0.05$) (Table 4).

The question "What is the right age to start brushing the teeth?" was answered correctly by 3.2% of students with illiterate mothers, 13.9% of students with literate mothers, 12.3% of students with primary education-graduate mothers, 7.6% of students with high school-graduate mothers, 26.7% of students with university-graduate mothers, 11.8% of students with illiterate fathers, 5% of students with literate fathers, 10.8% of students with primary educa-

Table 3. Distribution of correct answers of students in the Information Test (n=481)

Questions	n (%)*
1 What is the total number of primary teeth in children? (C.A): 20	144 (29.9)
2 What is the total number of permanent teeth? C.A: 32	215 (44.7)
3 When does the first primary tooth erupt? C.A: 6 month of age	336 (69.9)
4 When does the first permanent tooth erupt? C.A: 6 years of age	238 (49.5)
5 How many times a day should teeth be brushed? C.A: Twice a day	469 (97.5)
6 How long should you brush your teeth? C.A: 2 minutes	388 (80.7)
7 How often should you change your toothbrush? C.A: Once every three months	386 (80.2)
8 What is the right age to start brushing children's teeth? C.A: Right after the eruption of the first tooth	53 (11)
9 What is the ideal period for dental treatment in pregnancy? C.A: Second trimester	167 (34.7)
10 Which childhood diseases occurring in pregnancy affect the development of children's teeth? C.A: Rubella	76 (15.8)
11 Which of the followings is not a symptom of tooth eruption in infants? C.A: Excessive eating	363 (75.5)
12 Which of the followings is not one of the oral manifestations of diabetes? C.A: Excessive saliva	220 (45.7)
13 Which of the followings is not a systemic disease that should be considered before tooth extraction? C.A: Hernia	389 (80.9)
14 Which of the following antibiotics causes teeth discoloration? C.A: Tetracyclines	251 (52.2)
15 Which of the followings is not a bad habit causing oral malocclusion in children? C.A: Chewing gum	343 (71.3)
16 Which of the followings is not a symptom of periodontal diseases? C.A: Pink, firm gingiva	385 (80)
17 Who may have periodontal diseases? C.A: Persons of all age groups neglecting oral care	463 (96.3)
18 Which of the given factors are included in tooth decay etiology? C.A: Dental plaque, Microorganisms, Carbohydrates	444 (92.3)
19 What are root canal specialists called? C.A: Endodontist	158 (32.8)
20 Which of the followings is not a proper storage medium for a permanent tooth avulsed due to a hit/fall until visiting a dentist? C.A: Alcohol	197 (41)
Rate of correct answer	59.09
C.A: correct answer *Rate of correct answers is given as percentage.	

tion-graduate fathers, 15.3% of students with high school-graduate fathers, and 6% of students with university-graduate fathers with no significant differences between the percentages of accurate answers ($p>0.05$) (Table 4).

DISCUSSION

The inclusion of ODH education in the curriculum of healthcare professionals such as midwives and nurses is discussed worldwide (22). Undergraduate nursing programs in Australia involve limited emphasis on ODH, which covers only the definition of a healthy oral cavity. It was noted that undergraduate midwifery programs do not cover maternal oral health (23). Education programs of nurses and midwives in our study group do not cover ODH.

While most children are not examined by a dentist before 3 years of age in many countries, they are frequently in contact with primary healthcare providers, including nurses, approximately 10 times for routine checkups and immunization before 1 year of age (24). These routine checkups at community health centers provide an opportunity for healthcare professionals to assess the ODH of young children, to provide prophylactic treatment, including oral and dental examinations and fluoride therapy, and to refer a child to a dentist when a disease is diagnosed. Studies suggest that these individuals have a significant influence on preventive activities and constitute the target group for educational interventions (25, 26). It is therefore very critical to educate these healthcare professionals appropriately in order to enable them to give proper advice and promote ODH in society (27, 28).

Table 4. Comparison of answers given by students for questions on oral and dental health knowledge (n=481)

Variables	Knowledge questions			Statistics	
				χ^2	p
	How often should you change your toothbrush?				
Sex	Correct n (%)	Incorrect n(%)	Total n(%)		
Female	350(81.8)	78(18.2)	428(100)	4.868	0.027
Male	36(67.9)	17(32.1)	53(100)		
Total	386(80.2)	95(19.8)	481(100)		
	Which of the followings is not a symptom of tooth eruption in infants?				
Sex	Correct n (%)	Incorrect n(%)	Total n(%)		
Female	335(78.3)	93(21.7)	428(100)	16.487	0.000
Male	28(52.8)	25(47.2)	53(100)		
Total	363(75.5)	118(24.5)	481(100)		
	Which of the following antibiotics causes teeth discoloration?				
Department	Correct n (%)	Incorrect n(%)	Total n(%)		
Nursing	165(58.7)	116(41.3)	281(100)	11.570	0.001
Midwifery	86(43)	114(57)	200(100)		
Total	251(52.2)	230(47.8)	481(100)		
	Which of the followings is not a symptom of periodontal diseases?				
School year	Correct n (%)	Incorrect n(%)	Total n(%)		
First year	81(81.8)	18(18.2)	99(100)	4.128	0.248
Second year	142(77.6)	41(22.4)	183(100)		
Third year	102(77.9)	29(22.1)	131(100)		
Forth year	60(88.2)	8(11.8)	68(100)		
Total	385(80)	96(20)	481(100)		
	How long should you brush your teeth?				
Graduated high school	Correct n (%)	Incorrect n(%)	Total n(%)		
General high school	200(78.7)	54(21.3)	254(100)	6.783	0.148
Vocational high school	24(88.9)	3(11.1)	27(100)		
Science high school	31(83.8)	6(16.2)	37(100)		
Private high school	12(63.2)	7(36.8)	19(100)		
Anatolian high school	121(84)	23(16)	144(100)		
Total	388(80.7)	93(19.3)	481(100)		
	What is the right age to start brushing children's teeth?				
Mother's level of education	Correct n (%)	Incorrect n(%)	Total n(%)		
Illiterate	2(3.2)	61(96.8)	63(100)	9.298	0.054
Literate	5(13.9)	31(86.1)	36(100)		
Primary education	37(12.3)	264(87.7)	301(100)		
High school	5(7.6)	61(92.4)	66(100)		
University	4(26.7)	11(73.3)	15(100)		
Total	53(11)	428(89)	481(100)		
Father's level of education	Correct n (%)	Incorrect n(%)	Total n(%)		
Illiterate	2(11.8)	15(88.2)	17(100)	4.661	0.324
Literate	1(5)	19(95)	20(100)		
Primary education	28(10.8)	231(89.2)	259(100)		
High school	18(15.3)	100(84.7)	118(100)		
University	4(6)	63(94)	67(100)		
Total	53(11)	428(89)	481(100)		

The report titled "Oral Health in America: A Report of the Surgeon General" released in the US in 2000 emphasized that ODH and activities in this field have gained speed. This report stated that barriers to ODH included lack of access to care, complex health problems, considering ODH problems less important than other healthcare problems, and high costs. A framework for action was provided in the recommendations section of the report to change the perceptions of the public, policymakers, and healthcare providers. It was noted that healthcare professionals other than dentists were as important as healthcare providers (29).

Our study determined that nursing and midwifery students, who are the healthcare professionals of the future, have insufficient ODH knowledge. Furthermore, a large majority of students stated that they wanted to be educated on ODH in order to improve their knowledge in this regard. The low number of students who suggested inclusion of ODH in their educational curriculum might indicate that students do not consider oral examination as part of their specialty, as suggested by Fulmer et al. (30).

More than half of the questions on average were answered correctly by the students. Another study also revealed a low level of oral health knowledge among nurses, with less than fifty percent of questions answered correctly (31). The question with the lowest percentage of accurate response was "What is the right age to start brushing children's teeth?" which was answered correctly by only one out of every ten students. The misinformation that brushing should start after all primary teeth erupted was common among the students. As an important criterion for prevention of early childhood caries, the brushing should start with the eruption of the first primary tooth. The question "What is the total number of primary teeth in children?" was also one of the questions that was most frequently answered incorrectly (29.9%) in our study, while it was one of the questions that was most frequently answered correctly (80.8%) in the study of Kilinc and Gunay (6) conducted on medical students. This can result from the fact that medical student might have been lectured about this topic more intensely in anatomy lessons. The questions regarding frequency of brushing in a day (97.5%), brushing duration (80.7%), and frequency of changing toothbrushes (80.2%) were more frequently answered correctly by the students in our study compared to medical students (6). The question regarding the proper storage medium for a tooth after a traumatic injury was answered correctly by fewer than half of the students, and Eden et al. (21) have stated that having accurate information on ODH might allow for providing proper treatment when an emergency response is required. As effective health promoters with access to all segments of society, nurses and midwives must have accurate knowledge on the promotion of ODH. Our study revealed that only 22.2% of the students obtained information on ODH from a dentist. This rate has been consistently low in studies conducted in this regard (6). This finding revealed that there are problems in conveying information on ODH from specialists to society.

A Turkish study examined the knowledge levels of midwives before and after an ODH training provided by dentists in Izmir and indicated that knowledge levels of midwives improved after the training (13). Another Turkish study conducted in Kirikkale suggested that awareness of nurse candidates increased after a course given on ODH in society as part of the third-year curriculum, and the relationship between ODH and general health was better perceived (32). A similar Australian study examined ODH knowledge levels of midwives after implementation of the online Midwifery Initiated Oral Health

(MIOH) education program and found a significant increase in ODH knowledge level (21.5%). Furthermore, a large majority of midwives felt more confident in encouraging pregnant women on ODH and to refer them to dentists after the training (15). A study conducted in New Zealand sought to assess the effect of an ODH education program developed in the 1990s on sufficiency of the knowledge levels of nurses five years after the introduction of the program and determined that a great majority of nurses had accurate knowledge (33).

Several studies suggest that continuing and regular education programs have provided an accumulation of knowledge in the short and long term and have proven to be successful for healthcare professionals (34, 35). Accordingly, nursing and dentistry faculties in the US have been cooperating on the inclusion of ODH in education programs (36).

Limitations of the study

The limitation of the study was the fact that it was conducted at a single university with a small number of volunteer participants.

CONCLUSION

Turkish nursing and midwifery students have insufficient oral and dental knowledge and obtain ODH knowledge mostly by using the Internet, with very few students having regular dental check-ups.

We believe that ODH as part of general well-being is a common and important problem in Turkey, and holding dentists solely accountable for ODH concerns would not be sufficient to provide a solution to this problem. Thus, inclusion of this subject in the undergraduate education programs of all healthcare professionals would likely result in the promotion of ODH in society.

Accordingly, the results of this study can be regarded as a first step. After education programs are established, changes in knowledge levels and in mothers' behaviors can be considered. Improvements in awareness of ODH among children and society as a whole can be assessed in the long term.

Ethics Committee Approval: Ethics committee approval was received for this study from Marmara University Institute of Health Sciences Ethics Committee (26.01.2015, Decision No: 18).

Informed Consent: Oral informed consent was obtained from students who participated in this study.

Peer-review: Externally peer-reviewed.

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Hasta Onamı: Sözlü onam bu çalışmaya katılan öğrencilerden alınmıştır.

Hakem Değerlendirmesi: Dış Bağımsız.

Yazar Katkıları: Fikir - Y.A., S.K.Ö., A.N.B., S.A.; Tasarım - Y.A., S.K.Ö., A.N.B., S.A.; Denetleme - Y.A., S.K.Ö., A.N.B., S.A.; Kaynaklar - Y.A., S.K.Ö., A.N.B., S.A.; Malzemeler - Y.A., A.N.B.; Veri Toplanması ve/veya işlenmesi - Y.A., S.K.Ö., A.N.B.; Analiz ve/veya Yorum - Y.A., S.K.Ö., A.N.B., S.A.; Literatür taraması - Y.A., S.K.Ö., A.N.B., S.A.; Yazıyı Yazan - Y.A., S.K.Ö., A.N.B., S.A.; Eleştirel İnceleme - Y.A., S.K.Ö., A.N.B., S.A.

Teşekkür: Yazarlar bu çalışmaya katılan tüm öğrencilere ve veri toplama aşamasında yardımcı olan üniversite yöneticilerine teşekkür ederler.

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