A School Nursing Health Screening Program in Turkey: A Pilot Study

Türkiye'de Okul Sağlığı Hemşireliği Tarama Programı: Pilot Çalışma

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A SCHOOL NURSING HEALTH SCREENING PROGRAM IN TURKEY: A PILOT STUDY

ABSTRACT:

Aim: With the school health nursing screening program, which was carried out as a pilot study, it was aimed to examine the health status of school children and the affecting factors.

Method: This study was conducted with 115 third- and fourth-grade students in a state primary school in Istanbul. Within the scope of the health screening program, the students underwent a three-stage evaluation including growth assessment, blood pressure measurement, and physical examination. Examination findings were recorded in a standard form and analyzed using chi-square test and logistic regression analysis.

Results: It was determined that 18.3% of the students in the study were overweight and 17.3% were obese. Evaluation revealed dental caries in 53.9% of the students, vision problems in 35.7%, dirt in the outer ear/ear canal in 33.3%, runny nose in 27%, swollen lymph nodes in 14.8%, cough in 13%, nail biting in 11.3%, itchy skin in 9.6%, poor posture in 7%, and head lice or nits in 6.1%. Student age was associated with the prevalence of dental caries, nasal discharge, and dirt in the outer ear/ear canal ($p \leq 0.05$).

Conclusion and Suggestions: The study results indicate that regular health screening is important in identifying student health problems, with dental caries, runny nose, and dirt in the outer ear/ear canal being the most important health problems detected during screening. In addition, it is noteworthy that the rates of overweight and obesity are high in children.

Anahtar Kelimeler: *School children; School nursing; Pilot study; Screening*

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TÜRKIYE'DE OKUL SAĞLIĞI HEMŞIRELIĞI TARAMA PROGRAMI: PILOT ÇALIŞMA

ÖZ:

Amaç: Pilot çalışma olarak yürütülen okul sağlığı hemşireliği tarama programı ile okul çocuklarının sağlık durumu ve etkileyen faktörlerin incelenmesi amaçlandı.

Yöntem: Bu araştırma İstanbul'da bulunan bir devlet ilkokulunun 3. ve 4. sınıflarında öğrenim gören 115 öğrenci ile yürütüldü. Okul sağlığı hemşireliği tarama programı; büyüme ve gelişme değerlendirmesi, kan basıncı değerlendirmesi ve fiziksel değerlendirme olmak üzere üç basamaktan oluştu. Veriler öğrenci izlem formuna kayıt edildi. Verilerin analizinde; ki-kare testi ve lojistik regresyon analizi kullanıldı.

Bulgular: Araştırma kapsamındaki öğrencilerin % 18.3'ünün fazla kilolu, % 17.3'ünün de obez olduğu belirlendi. Öğrencilerin % 53.9'unda diş çürüğü, % 6.1'inde baş biti ya da sirke, % 35.7'sinde görme sorunu, % 27'sinde burun akıntısı, % 33.3'ünde kulak kepçesi ya da kulak yolunda kir, % 9.6'sında deride kaşıntı, % 14.8'inde lenf bezlerinde şişme, % 7'sinde postür bozukluğu, % 13'ünde öksürük ve % 11.3'ünde tırnak yeme belirlendi. Öğrencilerde yaşın çürük diş, burun akıntısı, kulak kepçesi ya da kulak yolunda kir görülme durumunu etkilediği sonucuna **ulaşıldı (p ≤ 0.05).**

Sonuç ve Öneriler: Araştırma sonuçları; sağlık taramasının düzenli yapılmasının öğrenci sağlık sorunlarının saptanması açısından önemli olduğu, taramalarla tespit edilen, çürük diş, burun akıntısı, kulak kepçesi ya da kulak yolunda kirin öğrencilerin en önemli sağlık sorunlarından olduğunu gösterdi. Ayrıca çocuklarda fazla kilolu olma ve obezite oranlarının da yüksek olduğu dikkat çekmektedir.

Anahtar Kelimeler: *Okul çocukları; Okul sağlığı hemşireliği; Pilot çalışma; Tarama*

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INTRODUCTION

School age is a critical period of ongoing growth and development, and health problems experienced during this time are known to have a lifelong impact. If not detected early, these problems can affect children's health, growth, academic achievement, and health status later in life (Smedley & Syme, 2000; Schor, 2018). Children in this age group are in transition to early adolescence. As transition periods carry health risks, research to characterize these periods is important to help nurses understand the mechanisms affecting health during transition periods and plan health protection and promotion interventions (Meleis, 2010).

According to 2016 data from the Turkish Ministry of Health, the most important health issues seen in children aged 7 to 14 years included oral health and dental problems, eye problems, infectious diseases, skin conditions, and diet-related diseases (Ministry of Health, 2017). Similarly, the American Academy of Pediatrics reported hearing loss due to ear infection, poor vision, eye infection, sore throat,

sinusitis, bronchitis, and lice as the main acute health problems seen in school children (Schor, 2018). These health problems can be identified through a careful and comprehensive evaluation. To this end, health screenings should be performed regularly, with priority given to vision, hearing, dental/oral health, and growth and development screening (Daughtry & Engelke, 2018; Dığrak et al., 2020; Hussein, 2005). Without early recognition and treatment, these problems may progress and cause more serious health problems. Moreover, the knowledge and life skills gained during school age influences children's future productivity in society, which increases the importance of protecting children's health during this period and identifying potential health barriers to learning as early as possible (Daughtry & Engelke, 2018; McKinley, 2021).

In the 2019-2020 academic year, there were 5,279,945 students in 24,790 primary schools in Turkey (Ministry of National Education, 2020). School health services are provided to students within the scope of Community Health Centers and the Family Medicine and School Health Cooperation Protocol (Ozcan, 2013). However, the continuity of health services provided in schools cannot be ensured without employing a nurse in each school. Although some private schools have infirmaries, most public schools do not have school nurses (Dığrak, 2020; Ulutaşdemir, 2016). Considering that many risk factors that are present in childhood persist into adulthood, measures should be taken to promote early detection and interventions to address these risk factors.

School nurses are the most important members of the school health team in terms of evaluating students' health at school and recognizing health issues (McKinley Yoder, 2020). There have been many successful studies conducted by nurses in schools to identify the health problems of students in Turkey, and these studies have demonstrated that school nurses can effectively address children's health problems by conducting health screenings and implementing nursing interventions such as health education, counseling, case management, and care in schools (Ceylan & Turan, 2009; Bayat et al., 2009; Dığrak et al., 2020; Koçoğlu & Emiroğlu; 2011). Therefore, this pilot study of a school nursing health screening program aimed to evaluate a) the health status of school children and its associated factors, and b) the importance of school nursing.

METHOD

Design and Sample

This research was a pilot study conducted in Istanbul between February 2019 and June 2019 in a primary school recommended by the District Directorate of National Education. Pilot studies use the same methods and procedures that will be used in a larger study but on a smaller scale, and are important in determining

the feasibility of a research project. The population of this study comprised a total of 205 students aged 9 to 10 years studying in the third and fourth grades of an elementary school in Istanbul. Before the study, informative meetings were held to explain the study objective and procedure to the students' parents. The study was completed with 115 students who volunteered to participate and whose parents provided consent (56.1% of target population).

Instruments

Data were collected using a standard form prepared by the researchers. The form included 19 questions in which the sociodemographic data of the student (age, gender, class, parental education level), growth variables (height, weight, body mass index), blood pressure and physical examination findings were recorded. Sociodemographic data was obtained from students. School health nursing screening program is the independent variable of this study, and physical examination findings (oral health, hair & scalp, eyes, nose, ear, skin, neck, musculoskeletal system, respiratory system, psychosocial problems, systolic and diastolic blood pressure values) is the dependent variable.

Data Collection Procedure

In the elementary school where the study was conducted, a health office with appropriate physical conditions (well-lit, quiet, safe) and equipment was designated for the provision of school health nursing services. In this health office, students underwent physical examination performed by third-year nursing students under the supervision of the faculty members comprising the research team for the study. Before the study, the faculty members on the research team provided the nursing students theoretical and practical training on growth assessment and physical evaluation in addition to the nursing curriculum. Three or four elementary students (one per nursing student) were invited to the health office at a time. The physical examinations took approximately 15 to 20 minutes and the findings were recorded on the study form. The evaluation included three steps: growth assessment, blood pressure measurement, and physical examination.

Step 1. Growth Assessment

Weight and height were measured to evaluate growth. The students were weighed in their school clothes without shoes using an electronic scale sensitive to 0.5 kg. Height was measured using a stadiometer sensitive to 0.1 cm with the students standing without shoes on a level surface with heels, hips, and shoulders against the wall.

Body mass index (BMI) was calculated as weight divided by height squared (kg/m2) and evaluated according to reference values for weight, height, and BMI

in Turkish children published by Neyzi et al. (Neyzi et al., 2008). According to the students' BMI, the WHO reference cut-off values for children were used to evaluate their risk of obesity as follows: BMI < 5th percentile were evaluated as underweight; 5th to < 85th percentile as normal weight; < 85th to 95th percentile as overweight, and ≥ 95th percentile as obese (Ministry of Health, 2017).

Step 2. Blood Pressure Measurement

Blood pressure was measured using an aneroid sphygmomanometer. Before measurement, their eating, exercise, and bladder were evaluated. The stethoscope was cleaned with 70% alcohol between students. After a period of rest, the measurement was performed with the student leaning back slightly in the chair and feet flat on the floor.

Step 3. Physical Examination

The physical examination encompassed evaluation of oral health, hair and scalp, skin, eyes, ears, nose and throat, musculoskeletal system, respiratory system, and psychosocial health.

For the oral and dental examination, a light source and tongue depressor were used to assess the teeth and tongue. The scalp was checked for head lice and nits, especially the back of the head and behind the ears, and the scalp skin was evaluated in terms of color, smell, temperature, moisture, turgor, edema, and the presence of lesions. Visual acuity was assessed using Snellen chart, the appearance of the eyes was noted, and complaints such as redness/discharge and watering were evaluated. Hearing was assessed by whisper test, and a light source was used to examine for dirt and discharge in the ear. The nose was examined using a light while manually raising the tip of the nose slightly. The nostrils and conchae were evaluated in terms of discharge, color, swelling, and tenderness, and the students' breathing was assessed. The neck was examined visually and by palpation for shape and symmetry. The parotid gland was evaluated for swelling.

The musculoskeletal evaluation included assessment of the students' posture and the position, shape, movement, and symmetry of the feet and legs; the respiratory system evaluation included assessment of the rib cage and respiration. In addition, each student was evaluated in terms of fingernail/cuticle biting, enuresis, and encopresis based on both self-report and teacher interviews (Figure 1). The school administration was provided a report including the names of the students whose physical examination revealed problems and the problem(s) detected. Students found to have psychosocial problems were referred to school counselors.

Ethical Considerations

Ethics committee approval (dated 12 February 2018, number 67) and permission from the Provincial Directorate of National Education (dated 02 January 2018, number 22548334) were obtained before initiating the study. At the informational meeting, the parents of the included students were informed by the researcher that the study was being conducted for scientific purposes and participation was voluntary, and their written informed consent was obtained. The study was supported by the University of Health Sciences Rectorate, Scientific Research Project Coordination Office (project ID: 069).

Analytic Strategy

The data were analyzed using SPSS 22 (Statistical Package for Social Science) was evaluated. Descriptive statistics (frequency, mean) and nonparametric statistical tests were performed. Sociodemographic data were evaluated using number, percentage, and mean values. Chi-square test and logistic regression analysis were used to examine the relationships between these characteristics. Results were evaluated within a 95% confidence interval and those with p values ≤ 0.05 were considered significant.

STEP 1
Wheigth Measurement

Height Measurement

BMI Evaluation

STEP 2
Blood Pressure Measurement

STEP 3
Mouth and Teeth

Hair and Scalp

Skin

Eyes

Ears

Nose

Throat

Musculoskel Etal System
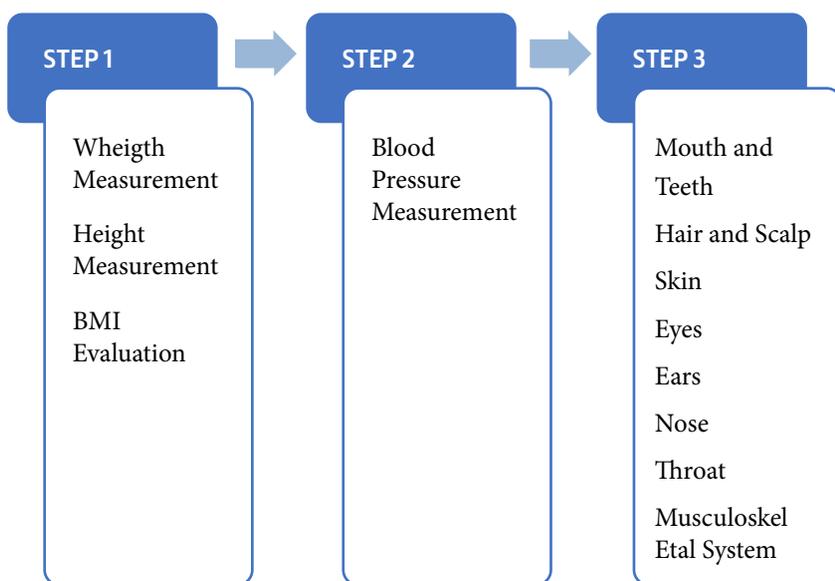
Figure 1. Physical evaluation procedure

RESULTS

The data obtained from the study were evaluated in three sections: sociodemographic characteristics, physical examination findings, and variables affecting the students' health.

Student Sociodemographic Characteristics

Of the students who participated in the study, 53.9% were girls and 50.4% were 10 years old and in the fourth grade. Maternal and paternal education level was high school for 28.7% and 23.5% of the students, respectively (Table 1).

Table 1. Sociodemographic characteristics of the students (n=115)

Characteristic	n	%
Sex		
Female	62	53.9
Male	53	46.1
Age (years)		
9	57	49.6
10	58	50.4
Grade		
Third	57	49.6
Fourth	58	50.4
Maternal Education Level		
Literate	12	10.4
Elementary School	27	23.5
Middle School	13	11.3
High School	33	28.7
University	30	26.1
Paternal Education Level		
Elementary School	25	21.8
Middle School	25	21.7
High School	27	23.5
University	38	33

It was determined that 48.7% of the students in the study were normal weight, 18.3% were overweight, and 17.3% were obese (Figure 2).
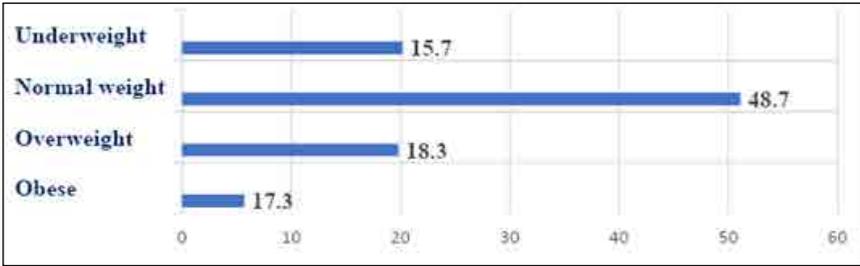
Figure 2. Distribution of students according to BMI category

Physical Examination Findings

Of the students evaluated, 53.9% had dental caries, 6.1% had head lice/nits, 35.7% had vision problems, 27% had runny nose, 33.3% had dirt in the outer ear or ear canal, 9.6% had skin itching, 14.8% had swollen lymph nodes in the neck, 7% had poor posture, 13% had cough, and 11.3% exhibited nail biting. The students' mean systolic and diastolic blood pressure values were 103.65 mmHg and 68.79 mmHg, respectively (Table 2).

Table 2. Distribution of the students' physical examination findings (n=115)

Physical Examination	Detected		Not Detected	
	n	%	n	%
Oral Health				
Hairy Tongue	5	4.3	110	95.7
Missing Tooth	17	14.8	98	85.2
Caries	62	53.9	53	46.1
Filled Tooth	22	19.1	93	80.9
Lack of Dental Care	9	7.8	106	92.2
Dental Malocclusion	12	10.4	103	89.6
Hair & Scalp				
Head Lice/Nits	7	6.1	108	93.9
Eyes				
Redness/Discharge	6	5.2	109	94.8
Eye Watering	5	4.3	110	95.7
Vision Problems	41	35.7	74	64.3

Nose				
Runny Nose	31	27	84	73
Ear				
Pain	5	4.3	110	95.7
Dirt in the Outer Ear/Ear Canal	38	33	77	67
Discharge	10	8.7	105	91.3
Skin				
Dehydration	3	2.6	112	97.4
Rash	6	5.2	109	94.8
Itch	11	9.6	104	90.4
Neck				
Abnormal Appearance	7	6.1	108	93.9
Swollen Lymph Nodes	17	14.8	98	85.2
Musculoskeletal System				
Poor Posture	8	7	107	93
Respiratory System				
Cough	15	13	100	87
Wheezing	5	4.3	110	95.7
Psychosocial Problems				
Enuresis	4	3.5	111	96.5
Encopresis	3	2.6	112	97.4
Nail Biting	13	11.3	102	88.7
Nail Bed Biting	9	7.8	106	92.2
Systolic BP (mmHg)				
Mean (SD) = 103.65 (15.06)				
Diastolic BP (mmHg)				
Mean (SD) = 68.79 (9.52)				

The students' physical examination findings are compared by age in Table 3. The frequency of dental caries, dental malocclusion, eye redness/discharge, runny nose, ear pain, dirt in the outer ear/ear canal, and cough differed significantly according to student age ($p \leq 0.05$).

Student Age					
Characteristic	**9 Years**		**10 Years**		**Statistics**
Oral Health*	**n**	**%**	**n**	**%**	**x^2; p**
Dental Caries	26	22.6	26	31.3	3.888; 0.049**
Dental Malocclusion	1	0.8	1	9.6	9.500; 0.002**
Eye*					
Redness/Discharge	-	-	6	5.2	6.441; 0.040**
Nose*					
Runny Nose	9	7.8	22	19.1	7.777; 0.005**
Ear*					
Pain	-	-	5	4.3	5.319; 0.021**
Dirt in Outer Ear/Ear Canal	14	12.2	24	20.9	4.195; 0.041**
Respiratory System*					
Cough	4	3.5	11	9.6	3.898; 0.048**

x^2: Chi-square test, *with problem, **$p \leq 0.05$

Table 3. Comparison of the age and physical examination findings of the student

Variables Related to the Students' Health Status

Chi-square tests between independent variable (sociodemographic characteristics) and dependent variables (physical examination parameters) were performed to identify factors associated with the children's health status. The only significant independent variable in this analysis was age, which was entered into a stepwise logistic regression analysis to generate a regression model.

The results of the analysis showed that student age affected the frequency of dental caries, runny nose, and dirt in the outer ear or ear canal. Compared to 10-year-old students, the 9-year-old students had 53% lower odds of having dental caries (OR = 0.474, 95% CI = 0.225-1.000), 71% lower odds of runny nose (OR=0.292, 95% CI= 0.120-0.711), and 69% lower odds of having dirt in the outer ear or ear canal (OR=0.310, 95% CI=0.092-1.039) (Table 4).

Table 4. Logistic regression analysis of factors affecting students' health status

Characteristic	Odds Ratio	95% Confidence Interval	p value
Oral Health*			
Dental Caries	0.474	0.225-1.000	**0.050****
Eye*			
Redness/Discharge	0.000	0.000	0.999
Nose*			
Runny Nose	0.292	0.120-0.711	**0.007****
Ear*			
Pain	0.000	0.000	0.999
Dirt in Outer Ear/Ear Canal	0.371	0.165-0.836	**0.017****
Respiratory System*			
Cough	0.310	0.092-1.039	0.058

*has problem, **p ≤ 0.05

DISCUSSION

Physical growth is evaluated based on height and weight measurements and calculated BMI values. In childhood, BMI calculations are important in assessing both growth and nutritional status. BMI provides information about obesity, which is an important problem in children (Radis et al., 2016). In the present study, 48.7% of the students were normal weight, 18.3% were overweight, and 17.3% were obese. In a study of approximately 4000 elementary school students, Savaşhan et al. determined that 11.1% of the children were overweight and 7.5% were obese (Savaşhan et al., 2015). In another study conducted in Turkey, 5.8% of the children were found to be underweight or very underweight, while 16-18.3% were overweight or obese (Kalyoncu et al., 2011). Health problems may be more common in overweight or obese individuals. Therefore, weight management, which can be defined as maintaining a healthy weight for age and height, is important for school age children in terms of ensuring healthy development, preventing future chronic diseases, and thereby promoting public health (Bayat et al., 2009; Jameson et al., 2018; Sanders et al., 2019). These results suggest the importance and necessity of interventions to encourage students to acquire balanced diet and physical activity habits for the prevention of adolescent obesity.

Oral health is an integral part of general health (Schor, 2018). In the present study, dental caries were the most common problem (53.9%) detected in the oral and dental health screening, and dental caries was found to be associated with the students' health status in logistic regression analysis. In addition to dental caries, the coexistence of multiple oral health problems in students also increases the importance of this condition. Oral health issues are reported to be the most common health problem in this age group. Studies conducted in Turkey show that the rate of caries in students is between 35% and 74.8% (Ceylan & Turan, 2009; Dığrak et al., 2020; Kalyoncu et al., 2011). This result shows that students should be encouraged to develop oral health promoting habits such as brushing, proper diet, regular dental check-ups, and avoiding behaviors that will adversely affect dental health.

The eye screening revealed problems in 45.2% of the students (redness/discharge, eye watering, vision problems). In a student eye screening carried out by Yaramış et al., it was determined that the most common problems were poor vision, headache, and eye watering (Yaramış et al., 2005). Without early recognition and treatment, vision problems in children may become more difficult or impossible to treat at older ages. In addition, visual impairments can adversely impact children's academic performance (Mattey et al., 2013). This finding indicates the importance of regular eye checks and demonstrates the need for families to develop the habit of annual eye examinations, as well as the need for regular eye screening in schools.

Rhinorrhea was detected in 27% of the students in this study and was associated with the students' health status in logistic regression analysis. Cough and wheezing were also observed in 17.3% of the students during respiratory evaluation. Özsoy, Kalkım and Sert reported that symptoms of upper respiratory tract infection (nasal congestion, discharge, cough, secretion, swelling in tonsils) were frequently detected on physical examination of elementary school students (Özsoy et al., 2019). The nasal discharge observed in the present study may have been caused by respiratory infection. Children can have upper respiratory tract infections five to eight times a year (Hussein, 2005). Increased spread of disease in the crowded classroom environment is believed to contribute to this.

The hearing screening did not reveal any problems in the students in this study. Issues related to ear hygiene were most common, and dirt in the ears was found to be associated with the students' health status in logistic regression analysis. Similar to our findings, Aydın et al. determined that 82.7% of the children in their study had dirt in the outer ear or ear canal (Aydın et al., 2004). The reason for the lack of hearing problems in the present study may be that children with hearing problems are generally diagnosed due to late speech or poor performance in preschool or early elementary school, after which they continue their education in schools for the hearing impaired.

In the students' musculoskeletal system evaluation, no suspected cases of scoliosis were detected in the screening for postural disorders. Scoliosis screening begins at the age of 10 years, and the diagnosis is most common when growth is at its peak, which corresponds to approximately age 12 in girls and age 15 in boys (Deepak et al., 2017; Yamamoto et al., 2015). Therefore, the absence of scoliosis in this study may be due to the age group sampled. However, 7% of the students were found to have poor posture. Although some posture problems in elementary school children are considered normal and resolve during the course of growth and development, it is critical to perform a school screening in order to detect some disorders that may impact the child's daily life when they reach adulthood (Daughtry & Engelke, 2018; Jameson et al., 2018).

On assessment of psychosocial problems with both self-report and teacher interviews, nail biting (11.3%), cuticle biting, (7.8%), enuresis (3.5%), and encopresis (2.6%) were identified. Similar to our study, Özsoy et al. determined that 8.4% of students had nail biting problems, while 22.8% of the students were afraid of the dark, 10.4% had insufficient sleep, 4.1% were shy, and 3.5% were hyperactive (Özsoy et al., 2019). Doğan and Kelleci reported stuttering in 2.3%, tics in 3.1%, finger sucking in 7%, encopresis in 1.9%, enuresis in 9%, and poor academic performance in 19.6% of the children in their study (Doğan & Kelleci, 2008). Kalyoncu et al. found that 4% of the students were hyperactive and 10% were introverted (Kalyoncu et al., 2011). According to the results of our study and previous studies, there appears to be a significant need to improve mental health services for students in schools.

In the present study, the students' systolic (103.65 ± 15.06 mmHg) and diastolic (68.69 ± 9.52 mmHg) blood pressure values were within normal limits. Reports that adult hypertension originates in childhood and childhood hypertension is associated with adult cardiovascular disease (Bayat et al., 2009) demonstrate the need for blood pressure screening of school age children. Such screenings are imperative in order to identify risky groups, take necessary preventive measures, and provide early diagnosis and treatment.

Finally, this study points to the role of age in the frequency of some health problems. Our findings showed that dental caries, dental malocclusion, eye redness/discharge, runny nose, ear pain, dirt in the outer ear/ear canal, and cough were more common in 10-year-old children than 9-year-old children. This may be attributable to the transition from childhood to adolescence. Although it differs for girls and boys, the World Health Organization recognizes the age of 10 years as the start of adolescence (World Health Organization, 2017). Changes occurring during the growth and development process may make adolescents more susceptible to certain health problems. Adolescence is known to be associated with many health risks, but there is little information on changes in children's physical health

status during the transition period (Smedley et al., 2000; Yamamoto et al., 2015). Further research on the physical health of children in the transition period is needed to reach a definitive conclusion on this subject.

CONCLUSIONS AND RECOMMENDATIONS

This pilot study is important in terms of promoting school nursing in Turkey. The results indicated that regular health screening is important for identifying student health problems, and showed that dental caries, runny nose, and dirt in the outer ear or ear canal were the main health problems detected by screenings. More than half of the children have oral health problems. In order to solve these problems in the early period, it is recommended that health education and screenings carried out by the community health center should be carried out regularly.

The results of this pilot study show that providing adequate school health infrastructure in Turkey is important to enable early detection of health problems among students, establish health offices and employ full-time school nurses in all schools, and strengthen communication between nurses, teachers, and parents. Access to health services provided by school nurses will improve the health of individuals and communities. Therefore, this study was conducted as a pilot program to demonstrate the importance and necessity of school health nursing studies, and will guide future large-scale studies.

LIMITATIONS

The first limitation of this study was that despite providing detailed information (group meeting, face-to-face interview) in advance, the study was completed with only the 115 students whose parents gave consent. Secondly, as data were collected at a single time point, we cannot rule out the possibility that high blood pressure may have been a result of the student's situation at the time of measurement (e.g., excitement, a recent meal, intense physical activity). Finally, since this study was conducted in only one primary school, the results of the study cannot be generalized to students in other schools.

Conflict of Interest:

No conflict of interest has been declared by the authors.

Author Contribution:

MK, SC, RG and MS designed the study. MK performed statistical analysis and drafted the manuscript. MK and SC provided medical oversight, subject screening, subject recruitment. MK, SC, RG and MS assisted with data analysis and helped prepare the manuscript. MK and SC revised it critically for important intellectual content.

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