



## ORIGINAL ARTICLE

# Comparison of Cardiological Problems and Common Health Problems of Syrian and Turkish School-age Children

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## Abstract

**Introduction:** Childhood health problems can lead to bigger problems in the future if not diagnosed early. Low socio-economic levels are closely related to the health of children, and more health problems are expected. This study aims to identify the health problems of Syrian refugee and Turkish school-age children and evaluate the common problems to plan health services accordingly.

**Methods:** The study was planned to be conducted at schools in determined districts. Informed consent forms were prepared in Turkish and Arabic and delivered to 14,514 Turkish and Syrian refugee children. The field visits of the study were completed between April–June 2019. A total of 12,603 children—2,101 Turkish and 10,502 Syrian—were examined by trained health personnel and doctors in 31 planned schools in the districts using the designed examination form.

**Results:** 12,603 students underwent health examinations; 7,025 students were found appropriate for further examination and tests, and 3,961 students were referred to hospitals for treatment. The most common health problems were dental issues and upper respiratory tract diseases. Acute rheumatic fever was detected in four children, and mitral valve insufficiency was detected in two children.

**Discussion and Conclusion:** Consequently, our study revealed the need to refer 10,986 of the 12,603 children for further examination, tests, or treatment. The study aimed to determine the health problems of school-age Syrian immigrants and Turkish children and to shed light on the health services to be provided.

**Keywords:** Child health; Childhood cardiologic diseases; School health.

The healthy development of school-age children has great importance for their future lives. Poor socio-economic status, inability to benefit from health services, ignorance, and indifference are important because they prevent health development. It is important to identify health problems that are present in school-age children and that may develop into more serious problems in the future and to determine the steps to address the issues through early and easy interventions.

Common problems in school-age children, such as vision and hearing problems, are also preventable, and early intervention is very cost-effective, while late treatment is burdensome to both the children and the health system. Even minimal uncorrected hearing loss is associated with an increased risk of poor performance on educational tests, higher rates of dysfunction in speech, language, and behavior, and higher rates of social emotional difficulties, including lower self-esteem.

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Especially, early determination of Rheumatic Heart Disease (RHD) or Acute Rheumatic Fever (ARF) is critical to ensuring that children adhere to the monthly secondary antibiotic prevention required to prevent RHD or further complications. The focus has generally been on management after a child has been diagnosed with either ARF or RHD, rather than on the prevention of the first episode of ARF. RHD affects children and young people living in conditions of poverty and overcrowding. Practically eliminated in wealthy countries, it is still common in the Middle East, Africa, and Asia. Thirty-three million people around the world suffer from the condition, which kills hundreds of thousands of people a year and is the most common acquired heart disease among children and young people in developing countries. Almost all cases of RHD and associated deaths are preventable<sup>[1]</sup>.

On the other hand, the conflict in Syria—triggering what is the worst humanitarian crisis since World War II—is now in its 10<sup>th</sup> year. Children continue to pay the highest price and bear the heaviest burden of the crisis: their education, emotional well-being, and even their lives are all at risk. According to the latest estimates from the Ministry of Interior Directorate General for Migration Management, Türkiye is home to the largest number of Syrian refugees, with nearly 3.6 million, and almost half of them are children. Based on the Ministry of National Education (MoNE) figures, approximately the total number of Syrian students enrolled in public schools and temporary education centers in Türkiye in the 2017–2018 academic year is 486,417<sup>[2]</sup>.

Socio-cultural challenges of being a refugee, financial difficulties, and adaptation to a new world, together with many shortcomings, cause refugees to neglect their health and that of their families. The refugees do not seek care from health care facilities unless they have serious health problems or symptoms. They also often experience barriers in accessing health services, for example, communication difficulties (e.g., lack of interpreters), cultural issues (e.g., gender preference for doctors), structural problems (e.g., transport), and bureaucratic barriers (e.g., social insurance systems).

In studies conducted in areas of low socio-economic level in Türkiye, compared to obesity, short stature and growth retardation in school-age children were much more prevalent. In a study conducted in Türkiye's southeast, short stature was detected in 8.9% of boys and 12.3% of girls, respectively. The prevalence of obesity was 1.0%, while the proportion of children with low weight was between 17.1% and 26.7%<sup>[3]</sup>.

For all of these reasons, a health screening study is conducted for all students enrolled in schools in socioeconomically disadvantaged areas where many Syrian refugee children reside in order to identify health issues, refer those in need

to more advanced medical facilities (secondary and tertiary care), inform educators about the health issues affecting school-age students, and assist families and students with potential problems in the future.

## Materials and Methods

Ethics committee approval was obtained from the Ethics Committee of University of Health Sciences Bağcılar Training and Research Hospital on 05.07.2019 (No: 2019.07.1.05.055), and the whole study process was carried out in accordance with the Declaration of Helsinki. Within the scope of the study, it was decided to include Küçükçekmece, Sultanbeyli, Sultangazi, and Zeytinburnu districts in Istanbul on the European side, with low socio-economic levels and high Syrian refugee density. It was planned to conduct the study at all primary schools in these districts. An informed consent form was prepared in Turkish and Arabic, and it was delivered to 14,514 Turkish and Syrian refugee families. 12,603 students (2,101 Turkish, 10,502 Syrian) whose families agreed to participate in the study were reached. Since the Syrian population was very high in the selected regions, most of the screened children were Syrians.

The field visits of the study were completed between April–June 2019. A total of 12,603 children were examined with great respect for children's privacy in 31 planned schools in the districts using the designed examination form. All examination findings were recorded electronically on tablets listed under the study by the nurses in the examination team.

Height and weight measurements of children in schools were made by nurses working in field teams. After taking necessary privacy precautions, their heights were measured with socks. Then the children were undressed (in their underwear), and their weights were measured using the same brand standard scale at each school. By trained health workers, a sample of throat culture was collected from the students whose families accepted it with informed consent.

The results were evaluated according to the standards prepared by the World Health Organization (WHO) in 2007, in which the Ministry of Health monitors the growth and development of children between the ages of 6 and 18, and children with shorter stature and/or less weight were considered to have developmental retardation.

Within the scope of the study, a series of seminars, information meetings, and trainings were organized for the teachers and students of the schools where the study was conducted. Informative brochures and other printed materials were distributed to families and teachers. In 31 schools reached, a total of 207 teachers were trained by medical staff about school health and the health problems of school-age children.



**Figure 1.** Comparison of numbers of health problems in Syrian and Turkish children (%).

**Results**

12,603 students underwent health examinations; 7,025 children were prescribed, given advice, or recommended follow-up. 3,961 students were referred to the hospital for treatment planning and further examination. While 50.8% (n=5335) of Syrian students are boys and 49.2% (n=5167) are girls, 51.8% (n=1088) of Turkish students are boys and 48.2% (n=1013) are girls. The distribution of diagnoses of Turkish and Syrian children as a result of the examination is presented in Figure 1.

Cardiac murmur was detected in 732 students at the first examination by a cardiologist. In the echocardiographic examinations, 646 of these students were found to have innocent murmurs. A murmur that did not cause hemodynamic changes but required follow-up was detected in the other 86 students. Details of the cardiological diagnoses detected and the comparison of other determined health problems in Syrian and Turkish students by gender are presented in Table 1. Besides obesity, refractive errors and simple upper respiratory tract infections are more common in Turkish school-age children (Table 1).

**Table 1.** Comparison of determined health problems in Syrian and Turkish students by gender

	Syrian				Turkish			
	Boys		Girls		Boys		Girls	
	n	%	n	%	n	%	n	%
Developmental disorder	34	0.6	37	0.7	2	0.2	0	0.0
Obesity	3	0.1	4	0.1	100	9.2	257	25.4
Scabies	2	0.0	2	0.0	1	0.1	1	0.1
Refractive errors	791	14.8	764	14.8	346	31.8	237	23.4
Hearing problem	28	0.5	21	0.4	3	0.3	1	0.1
Postural problem	536	10.0	583	11.3	104	9.6	274	27.0
Simple Upper Respiratory Tract Infection	907	17.0	846	16.4	529	48.6	368	36.3
Dental health and oral hygiene problems	2575	48.3	1987	38.5	329	30.2	302	29.8

In addition, it was observed that a total of 221 students—152 Syrian (1.4%) and 69 (3.2%) Turkish students—grew Group A beta haemolytic streptococcus in throat cultures.

In the examination, 478 students (311 Syrian, 167 Turkish) complained of migratory joint pain. Acute rheumatic fever (ARF) was detected in 4 of these 478 students who were referred to the health institution and penicillin prophylaxis was initiated. In the other 474 students, juvenile idiopathic arthritis, joint pains of psychogenic origin, growth pain, etc., were detected. Among the children with ARF, mitral valve insufficiency was observed in 2 Syrian (1 girl, 1 boy) children.

## Discussion

Türkiye hosts the largest number of refugees in the world. Since the beginning of the crisis in Syria, over 4 million Syrian refugees have fled to Türkiye, where they have been granted shelter. This makes Türkiye the country with the highest number of refugees in the world. When the literature is examined, it is stated that refugee children, who are exposed to war or forced displacement by governments, have many health problems. These problems, if not treated in childhood, will bring many burdens for societies and states in the future<sup>[4]</sup>.

A series of reports from the Health Evidence Network of the WHO European Region published in the period 2003–2016 summarize evidence available on diverse aspects of migrant and refugee health in Europe<sup>[5]</sup>. The large increase in displaced persons, migrants, and refugees requires a big global effort to achieve equity in access to health services. Access to health services is affected by poverty, stigma, discrimination, social exclusion, language and cultural differences, separation from family and socio-cultural norms, financial and administrative hurdles, and lack of legal status<sup>[6]</sup>.

Children, who are often ineffective in migration decisions, are the group that is most affected in the process. In this process, children are confronted with some physical, social, and mental threatening elements. Therefore, migration comes across as an important social variable affecting children's health, especially in recent years at a national and international level. Given their place in the family and society, it is evidently clear that the health problems experienced by migrant children should be carefully addressed and solutions sought<sup>[7]</sup>.

In general, inadequate health institutions and health manpower in the emigrating regions, insufficient economic power of migrants, lack of health insurance, malnutrition, transportation and language barriers, social and psychological stress are among the factors that adversely affect migrant/refugee health<sup>[8]</sup>.

In this context, according to a study of Latino immigrants in South Carolina, immigrants stated that primary health care access barriers include high service costs, lack of health insurance, family and job responsibilities, and language barriers<sup>[9]</sup>.

Although health services are free for refugees in Türkiye, it is seen that there is a problem in benefiting from the services (even though there are no terms required for this), because about 87% of children have been identified with health problems that require referral to a health institution. Problems with the use of this service may be the subject of another investigation. However, language barriers, difficult living conditions, family and job problems, low socio-economic levels, lack of awareness, and unconsciousness of the topic can all be counted as specific reasons in Türkiye.

In refugee groups, health problems are increasing due to lack of attention to hygiene conditions<sup>[10]</sup>. Previous studies in Türkiye have found that the most common health problems faced by refugees are as stated below:

- Nutritional disorders
- Growth and development retardation in children
- Dental health problems
- Anaemia
- Infectious diseases such as diarrhea, measles, malaria, respiratory infections
- Congenital heart diseases
- ARF and RHD
- Physical violence and related injuries
- Sexual abuse
- Sexually transmitted infections
- Unwanted pregnancies, risky pregnancies
- Miscarriages, birth complications
- Chronic diseases
- Mental problems such as depression, anxiety disorders, sleep disturbances, and post-traumatic stress<sup>[11-13]</sup>.

In a study comparing trauma exposure, psychological distress, and the use of mental health care among children and adolescents of US origin, refugee children were found to be much more commonly exposed to trauma than children of US origin. When compared to young adolescents of US origin, it was found that refugee youth had a higher rate of exposure to social violence, dissociative symptoms, traumatic mourning, somatization, and phobic disorders<sup>[7,14]</sup>.

Post-traumatic stress disorder is common among refugee children. In our study, the fact that psychological tests could not be performed under school conditions is a

limitation of the study. However, psychological disorders in refugee children are an important problem that needs to be investigated.

In a study conducted on Turkish school-age children in Sivas, the refractive error rate was 10.6%, the rotten teeth rate was 75.4%, the ear pain/itching complaint rate was 16.9%, and the rate of finding dirt in the ear was 73.8%. In addition, another study conducted by Çivi on Turkish children in Konya province found the incidence of refractive error to be 8.5%. Though estimates of prevalence vary depending on the population and specific vision issues, some other studies show that 22%–30% of children fail vision screening. In our study, 21.72% of the children have refractive errors, which is compatible with these findings. It is also known that vision-related problems in children make learning difficult; therefore, early identification and treatment of such problems are necessary for the child's learning and success. For this reason, children were directed to hospitals of Health Sciences University, and steps were taken to get the necessary treatments<sup>[15,16]</sup>.

In our study, in line with other studies, developmental disorders, congenital heart diseases, Group A  $\beta$ -haemolytic streptococcus infections, and vision and hearing problems were found in the general examination results performed in refugee children. In a study conducted in Türkiye, the incidence of congenital heart disease was reported as 7.7 per 1000 live births. In our study, it was found in 86 people, 0.7%, among the children who were screened. The most common congenital heart disease in our findings was an atrial septal defect. Although Yıldız et al.<sup>[17]</sup> detected mitral valve prolapses, atrial septal defects, and patent foramen ovale in order of frequency in patients over 12 years of age, in the study conducted by Ardic et al.<sup>[18]</sup>, congenital heart diseases detected in advanced ages were shown as atrial septal defect and ventricular septal defect, respectively<sup>[19]</sup>.

In a survey conducted in Malatya in 2018, the rate of hearing loss was found to be 3% among the 5<sup>th</sup> grades school-children. However, the rate of hearing loss was found to be approximately 0.6% in the screening performed in a family medicine region in Ankara. In our study 0.4% of children had hearing problems: 0.46% in Syrian children and 0.19% in Turkish children. It might show that Turkish children benefit improvements of health (especially primary health care implementations like screening for every new born and every student in schools) and technology in the country and even if they have hearing problems, they are being detected at early phase. However, concerns are increasing about noise-induced damage, and studies have shown

higher rates of hearing loss in adolescence, especially when high frequencies are added to screening test<sup>[20,21]</sup>.

In a study conducted on children between the ages of 6-15 in Denizli provincial centre in Türkiye, the incidence of obesity and overweight was found to be 13%. Boys and girls have a close frequency. In the study, it was thought that rare obesity in Syrian children would be related to malnutrition. By investigating this issue, families can be given the necessary support in order to prevent future complications. The high prevalence of obesity in Turkish children detected in our study was found to be consistent with the general literature. It is thought that literature should be added to the trainings in schools because obtaining the right eating habits at an early age will prevent many diseases in the future<sup>[22]</sup>.

In a study conducted with primary school children in Elazığ, the frequency of scabies was found to be 5%. In our study prevalence of scabies was 0.03% in Syrian children and 0.09% in Turkish children. Possible reasons for that difference might be: not have enough examination time for detecting scabies and/or not have an appropriate physical place for the examination to detect the scabies<sup>[23,24]</sup>.

The most important point that can restrict our project is that we had to finish our study only within one education term and in a restricted area. As other limitations, some of the families were hesitant to give the examination approval, since the socio-cultural level of some families was very low, teachers had to be informed about their children's situation, despite the small number, it was noticed that some families cared less about the health of their children due to difficult living conditions.

## Conclusion

Among the students undergoing health examinations, developmental disorder was observed in 71 Syrian and 2 Turkish students, while obesity was observed in 3,057 Turkish and 7 Syrian students. There is a need to identify the causes of developmental disorders rather than obesity and support families and schools in the services to be planned for Syrian children.

Unfortunately, 56.30% of Turkish and 14.80% of Syrian children have refractive errors. Early measures are of great importance in this regard. Therefore, it is obvious that there is a need for studies to be carried out in different regions of Türkiye. It should also be investigated why more than 1 in every 2 Turkish children has these refractive errors.

In the study, postural problems in Turkish children were found to be approximately 41 times higher than in Syrian



children. It is considered appropriate that health authorities should conduct studies on the causes and consequences of posture disorders in Turkish children. Among children who have postural disorders, 69.75% of Syrian and 89.36% of Turkish children are girls. Therefore, it should also be investigated if gender is a potential risk factor for this health problem.

Simple upper respiratory tract infection was diagnosed in 42.69% of Turkish children and in 16.69% of Syrian children. Further studies should be conducted to find out the causes of this situation, and if necessary, parents of these children should be educated on this health problem.

In addition, dental health and oral hygiene problems in Syrian children have been identified in nearly one out of every two children and in Turkish children in nearly one out of every three children in our study. Preventive measures should be taken for dental health and oral hygiene problems in children, which may cause bigger problems in the future.

Looking at one of the most important and general results, the study was conducted in a school area with a low socio-economic level; 12,603 students underwent health examinations; 10,986 students were found appropriate for further examination or treatment and were referred to hospitals. This ratio is 87.2% and is very high. It shows the necessity of this study and similar studies.

It is crucially important to support clinical and public health practices by increasing disease awareness and giving expertise among the health care workers, teachers, and parents so that they can provide appropriate health services to people with diseases, including clinical care and follow-up, in line with best practices.

Families tend to put their children's health in second place in the struggle for migration, adaptation to a new country, and survival. In addition, due to their inadequate level of education and not being able to easily access necessary learning resources, continuous and regular information about the health of their children is required. It may also be useful to inform families about the health units they can apply to as well as the functioning of those services. Language diversity is also another barrier for these families to access the necessary information. Preparing practical resources and information in their own language will help overcome this.

Consequently, according to the study findings, there is a need to refer 10,986 of the 12,603 children for further examination, tests, or treatment. These figures have demonstrated the importance of such services to be delivered to schools and children as well as established the necessity of the continuity of such studies.

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