

Nationwide Report on the Findings of Integrated School Health Screening Program in Iran

**MA Amirkhani¹, SM Alavian², M Dashti³, T Aminaie³, G Ardalan³, H Ziaoddini⁴,
P Mirmoghataee⁵, P Poursafa⁶, *R Kelishadi⁶**

¹*Bureau of Family, Health Population and School Health, Ministry of Health & Medical Education, Tehran, Iran*

²*Liver and Gastrointestinal Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran*

³*Youth and School Health Office, Ministry of Health & Medical Education, Tehran, Iran*

⁴*Bureau of Health & Physical Activity and Prevention of Social Hazards, Ministry of Education & Training, Tehran, Iran*

⁵*Dept. of Community Medicine, Isfahan University of Medical Sciences, Iran*

⁶*Isfahan Cardiovascular Research Center, Isfahan University of Medical Sciences, Iran*

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Abstract

Background: Screening of students' health problems could lead to timely prevention and control of many health disorders. This study aimed to determine the nationwide prevalence of common disorders through school health screening program in Iran

Methods: This cross-sectional national screening program was conducted in 2007-2008 among first- and third-grade students in primary schools, first- grade-students of middle and high schools of all provinces in Iran.

Results: Data were obtained from 3,124,021 (81.9%) students reported from the whole country classified into 33 geographical zones. Of total students studied, 12.48% had weight abnormalities, 4.77% had visual disorders, 3.95 % had head lice, 2.24% had behavioral disorders, and 0.6% had hearing disorders. Among students studied, 0.4%, 0.7%, 0.4% and 0.8% had endocrine, psychological, neurological and genitourinary disorders, respectively. In addition, 2.1%, 1.9%, 1.8%, 0.8%, 0.5%, 0.3% and 0.3% of students had ear, nose & pharynx disorder, anemia, skin & hair, cardiac, abdominal, vertebral and lung problems, respectively. In elementary schools, 57.6% of first-grade students with at least one disorder were managed in outpatient settings and 6% of them were hospitalized for more investigation. Among third- grade students of elementary schools, these values corresponded to 13.2% and 1.1%, respectively. Among first grade students of middle and high schools, this prevalence was 58.5% and 44.6% and 1.2% and 0.3% of students were hospitalized for more investigation.

Conclusion: This integrated school screening program revealed a considerably high prevalence of health disorders among school students. These results might help health policy makers to design future health promoting programs.

Keywords: *Child & Adolescent Health, Primary Care, Public Health, School Health Services*

Introduction

Health promotion and disease prevention are gaining an increased emphasis in health policy and clinical practice (1-2). The World Health Organization (WHO) describes setting, such as schools, as places where people live, work, and play. It recommended the use of a settings approach for improving health. This emphasis has gained increasing importance, leading to the development of the WHO's health promoting schools framework (3). Evidence of the benefits of working with schools to promote health is well-docu-

mented (4-5). Screening fits within the three levels of prevention including primary, secondary and tertiary levels. Screening program in schools are designed to identify children who have early signs of health problems (6).

Iran has one of the world's youngest populations, of the total population of near 70,000,000; about 15,000,000 are at school age. According to the data of the Ministry of Education & Training in 2007, there are 99,500 schools in urban and rural areas, and the coverage of education is more than 99% in primary schools, 91% for middle schools

and near 82% for high-school. Screening of school students is being conducted since 1996 and in its standard form is integrated to the health system from 2002. To the best of our knowledge, no previous study has reported the results of school screening programs conducted at national level in the Eastern Mediterranean region.

This paper presents the nationwide report of the prevalence of common disorders found through school health screening program in Iran.

Materials and Methods

This national program was conducted by the Ministry of Health & Medical Education (MOHME) with collaboration of the Ministry of Education & Training. The primary health care in Iran is provided by the vice-chancellorships for Health in universities of medical sciences, with at least one university in each province. Strict training processes and vigorous quality assurance programs were used to ensure the quality of data collection in all universities of medical sciences; uniform checklist prepared by a team of experts in the MOHME was distributed among universities in different provinces. The Data and safety Monitoring Board of the project closely supervised the quality control and quality assurance of the survey at the national level.

This program had two parts: 1- Screening of behavioral, hearing and visual disorders, pediculosis and calculating body mass index (BMI), this was performed by health care providers in health centers in rural areas and in school health offices in urban regions. The program included different parts such as getting the student's past history and family history of some disease, measurement of weight (kg) and height (cm) by using standard protocols and computing BMI as weight in kilograms divided by the square of height in meters, examination of visual acuity by Snellen Chart, history of behavioral disorders as enuresis, nail biting, stammering, history of having the symptoms of psychological disorders such as depression. The screening method for pediculosis was inspection of head lice.

2- Physical examination of students, which was conducted by general practitioner. They evaluated the signs of anemia by inspection pallor of palm and conjunctiva, thyroid disorders by inspection of thyroid and signs/symptoms of Cushing syndrome, abdominal disorders by inspection and palpation and percussion of liver and spleen, musculoskeletal disorders like scoliosis by inspection and standard forward bending test, skin and hair by inspection, heart and lung by auscultation with stethoscope, urogenital disorders by taking history and physical examination

This program was conducted in 2007-2008 among first- and third- grade- students in elementary schools, first- grade- students in middle and high schools in urban and rural areas throughout the country. All services were offered free of charge. The parents were informed about the health status of their children, and those students with any health disorder were referred to outpatient clinics or hospitals.

Results

Data were obtained from 3,124,021 (81.9%) students reported from 33 universities of medical sciences. The population studied consisted of 939,294 (94.8% of eligible students) first- grade- elementary school students and 789,218 (78.7% of eligible students) of third- grade elementary school students, 1,024,826 (72.9% of eligible students) of first grade students in middle schools and 340,085 (80.9% of eligible students) of first grade students in high schools.

Except than pediculosis, the prevalence of disorders had no significant difference in terms of gender, and the total prevalence is reported. Of total students studied, 12.48% had weight abnormality, i.e. body mass index $<3^{\text{rd}}$ percentile or $\geq 95^{\text{th}}$ percentile. 4.77% had visual disorders, 3.95% had head lice, 2.24% had behavioral disorders, and 0.6% had hearing disorders. The prevalence of the most common disorders in different school levels is presented in Table 1.

According to the physician's physical examination, among all students studied, 0.4%, 0.7%, 0.4% and 0.8% had endocrine, psychological, neurological

and genitourinary disorders, respectively. In addition, 2.1%, 1.9%, 1.8%, 0.8% 0.5%, 0.3% and 0.3% of examined students had ear, nose & pharynx disorder, anemia, skin & hair, cardiac, abdominal, vertebral and lung problems, respectively. More details about the prevalence of these disorders by school level are shown in Table 2. In elementary schools, 57.6% of first-grade students with at least one disorder were managed in

outpatient settings and 6% of them were hospitalized for more investigation. Among third-grade students of elementary schools, these values corresponded to 13.2% and 1.1%, respectively. Among first grade students of middle and high schools, respectively 58.5% and 44.6% of those with at least one disorder were managed in outpatient setting and 1.2% and 0.3% were hospitalized for more investigation.

Table1: Frequency of different disorders found in students

	Elementary schools		Middle schools	High schools
	First grade (%)	Third grade (%)	First grade (%)	First grade (%)
Weight disorders	14.8	10.6	10.6	13.6
Head lice	4.5	4.7	3	3.2
Behavioral disorders	3.4	1.5	2	1
Hearing disorders	0.6	0.6	0.7	0.4
Visual disorders	4.7	3.9	5.8	4.1

Table 2: Frequency of different disorders found in students by physician's physical examination in school screening program

Disorders in physical examination	Primary schools		Middle schools	High schools
	First grade (%)	Third grade (%)	First grade (%)	First grade (%)
Endocrine	0.3	0.5	0.4	0.3
Psychology	1.3	0.6	0.3	0.2
Neurology	0.6	0.4	0.2	0.4
Urinary	1	0.4	0.3	0.2
Genecology	0.4	0.3	0.2	0.3
Abdomen	0.6	0.5	0.4	0.5
Vertebra	0.5	0.2	0.2	0.2
Lung	0.3	0.3	0.2	0.3
Heart	1.1	0.8	0.6	0.6
Skin and hair	1.6	2.1	1.8	1.2
Ear, pharynx, nose	1.9	2.8	1.9	1.7
Anemia	1.8	2.4	1.6	1.3

Discussion

This study, which is the first of its kind not only in Iran, but to the best of our knowledge in the Eastern Mediterranean region, revealed a considerably high prevalence of previously undiagnosed health disorders among school students. It confirms the importance of implementing school-based screening programs. Most previous studies have been conducted in small number of students, and have assessed some health disorders (7-11),

such differences in methodology of various studies make the comparisons difficult.

When treatable health problems remain undetected, the child's ability to learn may suffer. In addition, his/her social development and safety may be compromised. Our findings confirm that schools can be used as health access sites for students to receive improved access to care that they might not receive elsewhere. Furthermore, families can benefit from primary or preventive services provided for

their children through school screening programs (12-13).

The most common disorder among Iranian students was weight disorders in terms of under- or overweight. Our previous national study showed a similar prevalence for underweight and overweight among Iranian school students (14-15). This double burden of nutritional disorders is well documented in developing countries undergoing epidemiologic and nutritional transition. Many developing countries, still grappling with the public health effects of malnutrition and micronutrient deficiencies, are experiencing a considerably high prevalence of childhood overweight (16). Iran is rapidly undergoing epidemiological, demographic and nutritional transitions. This is suggested to be secondary to the rapid change in fertility and mortality patterns, as well as urbanization, which have led to a considerable imbalance in food consumption; with low nutrient density diets and over-consumption evident among more than a third of households (17). Until now, most national public health programs and policies of low and middle-income countries, have focused on undernutrition of children. However, based on current knowledge, the appropriate practice of evidence-based health promotion in developing countries require consideration of childhood overweight and its complications in addition to nutritional deficiencies. School health screening programs as well as interventions for lifestyle change and improvement of dietary and physical activity habits can have pivotal role in this regard.

Schools can successfully expand access to health care services for all students, when the health program would include proper community diagnosis. Integrating school health services and screening programs with the school's existing health system program might assure the sustainability and quality assurance, and would be helpful in documenting time trends of health disorders at population level.

Study limitations & strengths

The main limitation of this study is that because of the large number of students studied, as well

as limited financial and staff resources, lifestyle habits and socio-demographic factors that might be associated with health disorders were not documented. Furthermore, as this paper aimed to provide a general insight of the findings of this screening program at national level, the details on the type of each disorder and differences between various geographical areas are not provided in this paper. The strength of this study was its novelty in the region and the nationwide coverage of students.

In Conclusion, This integrated school screening program revealed a considerably high prevalence of health disorders among school students. The results of this study might help health policy makers to design interventions for prevention and or early detection and treatment of the most common disorders documented among school students.

Ethical Consideration

All Ethical issues (such as informed consent, conflict of interest, plagiarism, misconduct, co-authorship, double submission, etc have been considered carefully.

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