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Self-reported chronic somatic diseases among adolescent students in Mansoura, Egypt

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ABSTRACT

Objectives: To estimate the prevalence of the common self-reported chronic diseases among adolescent students in public secondary schools in Mansoura, Egypt.

Methods: This is a cross-sectional study conducted on a sample of 1493 adolescent students. Thirty clusters were selected to cover both general and vocational public schools of both sexes in urban and rural areas. A self-administered questionnaire was used to collect sociodemographic data from the students and their families, as well as a checklist of 15 chronic diseases.

Results: About 6% of students reported one or more chronic somatic disease. The most frequent are acne vulgaris (4.2%), rheumatic heart disease (3.4%), refractive errors (1.4) and bronchial asthma (1.1%). This pattern does not show significant differences between males and females.

Conclusions: Despite the self-reported nature, our findings indicate that Egyptian adolescents are not healthy as it is often considered.

Keywords: Chronic diseases, public schools, rheumatic heart disease, Egypt

Running title: Chronic diseases among adolescent students

Introduction

WHO considers adolescence as the period between 10 and 19 years. Today, approximately one-fifth of the world's populations are adolescent, with more than four-fifths in developing countries. Health of adolescents has been somehow neglected in the past, perhaps because, as a group, they are perceived to be relatively disease free¹. There is a growing interest in assessing adolescent health because mortality and morbidity rates for adolescents in Western countries have increased in the past few decades². Improvements in therapeutic possibilities in developed countries in the last few decades

have led to increasing numbers of children and young adults who have survived congenital, perinatal or other severe medical conditions³. Therefore, the prevalence of chronic diseases in children and in young adults has increased since the 1980s and still likely to increase further^{4,5}.

Prevalence of chronic diseases in children ranges from 0.22 to 44%, depending on the operational definitions used^{5,6}. Self-reported health indicators seem to be more appropriate and more efficient in surveys of health status in adolescence than health indicators based on medical records or medical statistics⁷.

There is no information about the prevalence of chronic diseases among adolescents in

Egypt. Moreover, we know very little about the Egyptian adolescents, especially about self-reported health problems. The objectives of this study are to determine the prevalence and types of chronic somatic diseases among secondary school adolescent students in Mansoura, Egypt.

Methods

This is a cross-sectional study carried out during the period October 1, 2010–November 1, 2010 in Mansoura, the capital of Dakahlia governorate, Egypt, located on the river Nile in the northeast of the Delta. Approval of the local directorate of education and school administration was obtained. The survey was carried out among secondary school students enrolled in general and vocational public schools.

Sample size was calculated using *Epi-Info*, version 6.02. The total number of students registered in the public secondary schools of Mansoura district was about 650 000 (according to the directorate of education). The pilot study on 200 students (not included in the full-scale study) indicated that about 5% of students reported one or more chronic disease. With the worst acceptable level 4%, the sample needed for the study was estimated to be at least 1472 at 95% confidence level.

Secondary schools in both educational zones (eastern and western zones) in Mansoura city as well as the rural sector were included. One general secondary school for girls and 1 for boys were randomly selected from each zone (i.e. 4 general schools in the urban sector) as well as 1 mixed school from the rural sector. Five vocational schools (1 commercial school for boys and 1 for girls; 1 industrial school for boys and 1 for girls and 1 mixed agricultural school) were selected from Mansoura city. This distribution covered all social strata, both

sexes, and included both urban and rural sectors of the community.

From each selected school, 1 class (cluster) from each grade was randomly selected, i.e. 30 classes in all, 10 from each grade. A total of 1533 students were registered in these classes and 1493 (response rate of 97.4%) participated in the study. The others were either absent (2.2%) or refused to complete the questionnaire (0.4%).

With the help of the school authorities, the investigators spent 30–40 minutes in each class. Students were briefed about the study, encouraged to participate and to express their experiences. It was emphasized that all data collected was strictly confidential and the students gave fully informed verbal consent to participate.

Students were then asked to complete a self-administered questionnaire on family and personal background. Socioeconomic status was calculated according to Fahmy and El-Sherbeny⁸. This score encompasses paternal education and work, family size, housing condition and per capita monthly income. All students were requested to check a list of 15 somatic chronic diseases, other than dental problems, which are prevalent in adolescence. The responders were asked whether or not they had suffered from any of these documented physician-diagnosed somatic health problems for more than 3 months duration, for which the student is on continuous or intermittent management.

Data were analysed using SPSS, version 16. Categorical variables were presented as number and percent and quantitative variables were presented as mean \pm SD. Chi squared test was used for comparison between groups. $P \leq 0.05$ was considered significant.

Results

Data of 1493 (706 males and 787 females) students were analyzed. Their age ranged from 14 to 21 with a mean of 15.8 ± 1.1 years. Table (1) shows that majority of students (43/0%) were enrolled in general secondary school and belong to families of low or very low socioeconomic status (63.5%). About 6% of students reported one or more chronic disease. The most frequent are acne vulgaris (4.2%), rheumatic heart disease (3.4%), refractive errors (1.4) and bronchial asthma (1.1%) (table2). This pattern does not show significant differences between males and females (data not shown).

Discussion

Chronic diseases are the leading cause of mortality and morbidity and they will represent an even larger burden in the future. Nowadays, young and middle-aged people are affected by chronic conditions. The economic implications of such diseases are also serious⁹. Our findings show that self-reported chronic diseases are not uncommon among adolescents. More than 6% of studied adolescents reported one or more chronic diseases. This low rate, compared to studies in developing countries, could be attributed to different operational definitions of chronic diseases in different studies. Obviously the measurement of the prevalence rates of chronic conditions depends on the access to health services. If access is limited, a number of patients will remain undiagnosed. However, this is a problem of ascertainment; it does not mean that these people do not fit the definition of having a chronic condition³. Behavioural and mental disorders were not included in our list of chronic diseases. Much higher rates were reported from developed countries. Epidemiological data from several countries seem to agree that 10-15% of the adolescent population have chronic diseases⁶. Much higher rates were reported from USA (31%)⁹,

Netherlands (37.9%)¹⁰, and Slovakia (50%)⁷. No data are available from the developing countries.

Skin problems are common among adolescents whether self-reported or clinically diagnosed¹¹. Acne vulgaris is the frequently reported chronic disease (4.2%). The prevalence is intermediate compared to the prevalence of self-reported skin disease in different countries. A lower rate were reported in Sudan (3.2%)¹³. A much higher rate was reported in Slovak (7.2% for boys and 11.0% for girls)⁷ and Dutch adolescents (11.0%)¹¹.

An important finding is that 3.4% of students reported that they have rheumatic heart disease. This reflects the widespread of streptococcal infection and rheumatic fever during childhood with inadequate treatment among students belonging to families of low and very low socioeconomic status. Rheumatic fever /rheumatic heart disease comprise a unique disease entity that spans the infectious and post-infectious chronic disease paradigm¹⁴. Rheumatic fever remains a disease with great morbidity and mortality in most low-and middle-income countries, despite having been nearly eradicated in high income countries. It is therefore a neglected disease and a disease of poverty. Despite the presence of effective primary and secondary prevention, treatment and rehabilitation methods, rheumatic fever and rheumatic heart disease continue to wreak a heavy toll on developing countries¹⁴⁻¹⁷. The prevalence of heart defects was 1.6% in adolescent males, in Israel¹⁸, and 1.5% in American adolescents⁴. Refractive error is the third common self-reported chronic diseases in our study, accounting for 1.4% of adolescent students. A previous survey in Cairo, reported refractive errors in 22.1% examined students¹⁹. The reported rate among Indian adolescents was 13.8%²⁰.

Asthma is the most common chronic disease of childhood worldwide; the prevalence of asthma among children has increased steadily

during the past two decades²¹⁻²². The self-reported bronchial asthma was 1.1%. Several factors that are highly prevalent in the study locality may predispose children to acquire asthma, including crowded houses and classrooms, low income level and frequent exposure to environmental allergens. A lower rate was reported from India (0.86%)²⁰, Slovak (1.0% for boys and 2.2 for girls)⁷. Higher rates were reported from other studies; in Sudan (3.2%)¹³, in USA (4.25%)⁴, in Alaska Native students (7.4%)²³, in Dutch (12.6%)¹¹, and in Israeli males (11.2%)¹⁸. Headache/migraine and epilepsy are neurologic problems reported by 0.6% and 0.1% of students, respectively. The corresponding rates were 2.5% and 0.24% (in USA)⁴; 5.6% and 0.6% in Dutch¹¹; 0.1% and 0.6% for boys and 3.0% and 6.7% for girls in Slovak (Geckova et al, 2001)⁷; respectively. Headache and epilepsy are the commonest neurologic disorders among Israeli male adolescents^{18,24}.

In conclusion, chronic somatic illnesses are not uncommon among adolescent students. School health team should provide long-term integrated care for those students with chronic diseases, consider their requirements and provide adequate information. Rheumatic heart disease is still a common problem in Egypt. Early diagnosis and appropriate treatment of streptococcal infection is most effective primary prevention method of this disabling chronic condition.

It is important to direct efforts of primary health care workers for early detection of chronic somatic disease in adolescents. It is important to develop more systematic procedures to monitor students and adolescents with chronic conditions.

Study limitations: The study included only adolescents enrolled in public schools. Students in private school, in schools for students with special needs and out of school adolescents were not included. The self-reported nature of the chronic disease is

another limitation. Only physician-diagnosed diseases were reported. However, reporting of chronic disease will be influenced by health care use; for example, adolescents of lower socioeconomic status may under-report chronic illness because of lower rates of health care use. Despite these limitations this is the first study of chronic diseases in adolescent in our locality. It may pave the way for large scale national community-based survey to give the picture of chronic morbidity, both physical and mental, among adolescents. There is a need to develop an Arabic validated questionnaire that can be used for epidemiologic studies. Development of a comprehensive standard list of chronic health conditions based on the International Classification of Diseases would facilitate the understanding of the adolescent health in the context of the current international health framework provided by the World Health Organization.

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Conflict of interest: none

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Table 1: Educational and family characteristics of studied students

		N (%)
Total		1493 (100)
Residence:	Rural	753(50.4)
	Urban	740(49.6)
School:	General	642(43.0)
	Industrial	223(14.9)
	Agricultural	294(19.7)
	Commercial	231(15.5)
	Nursing	103(6.9)
Grade:	One	410(27.5)
	Two	587(39.3)
	Three	496(33.2)
Father's work:	Farmer	140(9.4)
	Manual worker	574(38.4)
	Professional/semiprofessional	501(33.6)
	Others*	278(18.6)
Father's education:	Less than secondary	833(55.8)
	Secondary	279(18.7)
	Above secondary	381(25.5)
Mother's work:	Housewives	1063(71.2)
	Working	430(28.8)
Mother's education:	Less than secondary	933(62.5)
	Secondary	268(18.0)
	Above secondary	292(19.6)
Family income:	Do not meet expenses	1017(68.1)
	Not meet expenses	266(17.8)
	Save	210(14.1)
Social class :	High	311(20.8)
	Middle	235(15.7)
	Low	174(11.7)
	Very low	773(51.8)

* Trades, business, on pension, military/policemen.

Table 2: Self-reported physician-diagnosed chronic disease among adolescent students

Disease/symptoms	N (%)
Any disease/symptom	92(6.2)
Diseases	
Acne vulgaris	62(4.2)
Rheumatic heart disease	51(3.4)
Refractive errors	21(1.4)
Bronchial asthma	16(1.1)
Juvenile diabetes mellitus	5(0.3)
Allergic rhinitis	5(0.3)
Anemia	4(0.3)
Nocturnal enuresis	3(0.2)
Glucose-6-phosphate dehydrogenase deficiency	3(0.2)
Epilepsy	2(0.1)
Hypertension	1(0.1)
Hereditary familial Mediterranean fever	1(0.1)
Thalassemia	1(0.1)
Symptoms	
Headache	9(0.6)
Neck and shoulder pain	6(0.4)