Self-reported adolescents' health and gender: an Egyptian study

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التبليغ الذاتي عن صحة المراهقين في الجنسين: دراسة مصرية

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الخلاصة: لتحديد المشكلات الصحية المبلّغ عنها ذاتياً، بين المراهقين، تم إجراء دراسة متعدّدة المراحل على شريحة عشوائية مكونة من 1002 مراهق من المدارس الإعدادية والثانوية بالقاهرة (67.6% من بحموع أفراد العينة) ومنطقة ريف القليوبية (32.4%). وتم تلقي 54% من الاستبيانات المستوفاة التي تم تحليلها، والبالغ عددها 863 من الذكور بينما تم تلقي 46% منها من الإناث، ممن تتراوح أعمارهم بين 12 و18 سنة. واتضح من الدراسة أن عدد الذكور الذين يَرَيْن أن حالتهم الصحية ممتازة كان أكبر من عدد الإناث اللائي يَرَيْنها كذلك، بينما كان عدد الإناث اللائي يَرَيْن أن حالتهن الصحية متوسطة كان أكبر من عدد الذكور الذين يرونها كذلك. ومما يسترعي الانتباه، أن عدد المراهقات اللائي أبلغن عن إصابتهن أسبوعياً بألم البطن، والصداع، والدوار، وألم الظهر، والتعب في الصباح، واضطراب النوم، والعصبية، كان أكبر من عدد المراهقين الذين أبلغوا عن ذلك. ومن الضروري توعية الوالدين والمراهقين، حتى يتسنّى تحديد العلاقة بين جنس المراهق وبين الصحة.

ABSTRACT To identify self-reported health problems among adolescents, a multistage, stratified random sample of 1002 adolescents from preparatory and secondary schools in Cairo (67.6% of the total sample) and the rural district of Qaliubia (32.4%) was surveyed. Of 863 completed questionnaires analysed, 54% were from males and 46% from females (age range: 12–18 years). The study showed that more boys than girls perceived their health as very healthy whereas more girls considered their health to be average. Significantly, more adolescent females reported weekly occurrence of abdominal pain, headache, dizziness, backache, morning tiredness, sleep disturbance and nervousness. Awareness-raising of parents and adolescents is necessary to allow determination of the relationship between gender and health.

La santé des adolescents telle qu'ils la perçoivent eux-mêmes et la sexospécificité : une étude égyptienne

RESUME Afin d'identifier les problèmes de santé chez les adolescents tels qu'ils les perçoivent eux-mêmes, un échantillon aléatoire stratifié à plusieurs degrés de 1002 adolescents venant d'écoles préparatoires et secondaires du Caire (67,6 % de l'échantillon total) et du district rural de Qaliubia (32,4 %) a fait l'objet d'une étude. Sur les 863 questionnaires remplis qui ont été analysés, 54 % provenaient de garçons et 46 % de filles (âge compris entre 12 et 18 ans). L'étude a montré que davantage de garçons que de filles percevaient leur santé comme très bonne alors que davantage de filles considéraient leur santé comme moyenne. D'une manière significative, davantage d'adolescentes signalaient une survenue hebdomadaire de douleurs abdominales, de céphalées, de vertiges, de lombalgies, de fatigue matinale, de troubles du sommeil et de nervosité. Une prise de conscience des parents et des adolescents est nécessaire pour permettre de déterminer la relation entre la sexospécificité et la santé.

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Introduction

Adolescent health, often limited to discussions surrounding cigarette smoking and other drug-taking, sexually transmitted diseases or adolescent pregnancy, is in fact a broader field of enquiry with many other issues requiring investigation. The World Health Organization defines 'adolescence' as the age cohort 10–19 years [1]. Following the worldwide interest in child and maternal health, within the past decade an interest in youth, or adolescent health has developed. As Friedman states "adolescence is a crossroad in development for life" [1]. In Egypt, adolescents constitute nearly one-quarter of the population [2]. There are 3.57 million adolescents enrolled in preparatory schools nationwide, and 2.52 millions students in general and technical secondary schools [3]. Enrolment in primary education is > 90% of those age-eligible, and in secondary education, 74% of the age-eligible population is enrolled [4].

What do adolescents report about their health, and how do they perceive the issue? Gender difference presents itself very early in adolescent health. Self-reported symptoms are potential indicators of these differences — differences that could potentially be used to screen for future problems. This study aimed to identify self-reported health problems of adolescents, taking into account gender issues, in order to identify common problems which may be preventable.

Methods

A multistage, stratified random sample of 1002 adolescents in preparatory and secondary schools was taken in urban (67.6%) areas in greater Cairo and a rural (32.4%) area in Qaliubia. From the 24 educational districts in Cairo, two were chosen randomly — Madinet Nasr with approximately 24 000 students and El-Wayli with approximately 39 000 students [5]. From these two districts, four schools representing preparatory and secondary stages — one for each sex — were randomly chosen. From each grade, one class was taken randomly, resulting in a total of 677 students. A similar methodology was used for the Qaliubiya rural area. From nine rural districts, one was randomly chosen — Shebin — with approximately 14 000 students [5]. From four schools, three different classes/grades were randomly chosen. Every second pupil (325 students) was given a questionnaire to complete.

Of the 1002 students initially sampled, 863 self-reported questionnaires were included in the analysis, of which 466 (54%) were from male respondents and 397 (46%) from females. The age range of the 863 respondents was 12–18 years (Table 1). Excluded were questionnaires that were incomplete or inaccurately completed. Girls were more serious and accurate in completing the questionnaire items than boys. The items of the Health of Youth questionnaire [6] were adjusted to comply with Egyptian cultural norms. The questionnaire included items related to the adolescents' family, school, leisure time, self-estimation of health, weekly symptoms of health problems, and weekly/daily dietary habits. Significant differences were

Table 1 **Sample distribution of male and female adolescents according to age**

Sex	Age (years)							Total
	12	13	14	15	16	17	18	
Male	35	88	148	98	50	33	14	466
Female	73	64	61	43	56	47	53	397
Total	108	152	209	141	106	80	67	863

Table 2 **Self-reported symptoms and health problems (appearing at least once a week) of adolescents by sex, age and residence**

Variable	Headache %	Abdominal pain %	Feeling nervous %	Feeling dizzy %	Sleep disturbance %	Backache %	Morning tiredness %
Sex							
Male	56.3	34.4	32	27.4	26.9	24.1	23.9
Female	70.5*	52.4*	48.6*	36.0*	38.0*	35.8*	30.7*
Age (years)							
12	62.0*	38.0*	22.2*	25.0*	13.0*	20.4*	17.6*
13	53.0	46.1	23.2	19.9	21.9	17.2	19.2
14	62.1	39.0	36.4	27.9	31.7	25.9	25.4
15	61.0	35.5	43.3	34.0	26.2	27.7	27.7
16	66.0	48.1	54.7	43.4	46.2	44.3	39.6
17	70.0	46.3	56.3	36.3	48.8	41.3	35.0
18	79.1	56.7	64.2	47.8	56.7	49.3	37.3
Residence							
Rural	63.4	34.2	33.0	31.4	29.5	27.7	25.3
Urban	62.6	46.8*	42.9*	31.4	33.3	30.3	27.9

*Statistically significant at P < 0.05.

found between males and females regarding age distribution. Age was taken into consideration in the analysis.

Perceptions of adolescents about their health were divided into four categories: very healthy, healthy, average and bad. In the regression analysis, a comparison was made between the categories average/bad health and very healthy/healthy. Students were asked about physical symptoms of health problems within the previous week, and whether they took medication for the perceived symptoms. 'Depression', 'stress and tension' score, as well as feeling 'happy', 'lonely', 'self-confident', 'unwell and weak' or 'strange' were scaled to assess the tendency of respondents [7]. The split-half reliability test of the 'depression' score (6 items, 0–18) gave a result of $r = 0.76$, and for the 'stress/psychic tension' score (6 items, 0–18), $r = 0.73$.

Feeling 'happy', 'lonely', self-confident, 'unable and weak' or 'strange' had only one item and scored from 0–3. The test–retest reliability ranged from $r = 0.50$ to $r = 0.57$.

Statistical analysis was performed with *SPSS*, version 5.0.2. Descriptive statistics, significance tests such as chi-squared and Yates corrected chi-squared, Student *t*-test, *ANOVA* and logistic regression were performed. For some items it was necessary to carry out the analysis for each age as well as further divide them according to gender. A *P*-value of < 0.05 was considered significant.

Results

Significantly more boys (24.1%) than girls (13.6%) perceived their health as very healthy; 46.5% of boys and 40.6% girls perceived themselves to be healthy; 25.4% of boys and 41.4% of girls stated their health to be average, with a smaller per-

centage of the sample describing their health as bad (boys 4.1%, girls 4.8%). How adolescents view symptoms of health problems (appearing at least once/week) divided by sex, age and residence is shown in Table 2. Significantly more adolescent females reported weekly symptoms of headache (70.5%), abdominal pain (52.4%), nervousness (48.6%), dizziness (36.0%), sleep disturbance (38.0%), backache (35.8%) and morning tiredness (30.7%). Significantly more 15 18-year-old girls had once-weekly abdominal pain. Also, females experienced significantly more headaches, backaches and dizziness at ages 15, 16 and 18 years (Figures 1–3). Sleep disturbance and morning tiredness were more commonly reported by 15- and 16-year-old females than by males. No significant gender difference was found in having disease of duration > 1 month (14.4% boys, 16.4% girls). Injuries were

significantly more common to males (24.3%) than females (15.2%), and to rural (25.7%) than urban (17.3%) residents. There was no gender difference in having had previous surgery (male 22.0%, female 18.3%), although there was a difference between rural (12.6%) and urban (24.0%) residents. Older age groups had had more surgical procedures than younger age groups. No difference was found between males and females regarding taking medication for diverse symptoms, even within the analysis of each age group separately, with the exception of headache where percentages for 13-, 17- and 18-year-old females were significantly higher than males, and of abdominal pain, where the percentages for 16- and 17-year-old females were also significantly higher.

Responses to feeling depressed, stress/ psychic tension, happy, lonely, self-confident, unwell and weak, and strange by sex,

Table 3 Mean and standard deviation scores for feeling depressed, psychic tension, happy, lonely, self-confident, unable and weak, and strange in adolescents by sex, age and residence

Variable	Feeling depressed	Psychic tension	Feeling happy	Feeling lonely	Feeling self-confident	Feeling unwell and weak	Feeling strange
Sex							
Male	4.9 ± 3.6	5.2 ± 3.1	1.9 ± 1.0	0.8 ± 0.9	1.9 ± 1.1	0.8 ± 0.9	0.5 ± 0.8
Female	7.2 ± 4.6*	6.5 ± 3.5*	1.9 ± 0.9	1.1 ± 1.1*	1.8 ± 1.0	0.9 ± 0.9	0.6 ± 1.0*
Age (years)							
12	5.3 ± 3.9	5.4 ± 3.3	Total	0.9 ± 1.0	Total	0.9 ± 1.0	0.7 ± 1.0
13	4.7 ± 3.8	5.2 ± 3.2	1.9 ± 1.0	0.7 ± 0.9	1.9 ± 1.1	0.7 ± 0.9	0.4 ± 0.8
14	5.2 ± 3.5	5.2 ± 2.9		0.7 ± 0.9		0.7 ± 0.8	0.4 ± 0.8
15	5.8 ± 4.2	5.5 ± 3.4		0.8 ± 1.0		0.8 ± 1.0	0.5 ± 0.9
16	7.6 ± 4.5	6.9 ± 3.5		1.2 ± 1.1		1.0 ± 1.0	0.7 ± 1.0
17	7.5 ± 4.7	6.7 ± 3.2		1.3 ± 1.2		1.0 ± 0.9	0.7 ± 1.0
18	8.4 ± 4.6*	7.3 ± 3.5*		1.3 ± 1.1*		0.9 ± 0.9*	0.8 ± 1.2*
Residence							
Rural	5.5 ± 4.1	5.5 ± 3.5	1.9 ± 1.0	0.8 ± 1.0	1.9 ± 1.1	0.8 ± 0.9	0.6 ± 0.9
Urban	6.2 ± 4.2*	5.9 ± 3.2	1.9 ± 1.1	1.0 ± 1.0*	1.8 ± 1.0	0.8 ± 0.9	0.5 ± 0.9

*Statistically significant difference with t-test or ANOVA (P < 0.05).
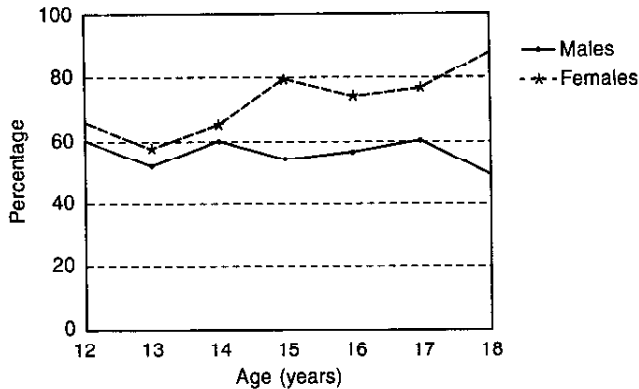
Figure 1 **Percentage of male and female adolescents with headache once or more per week according to age**
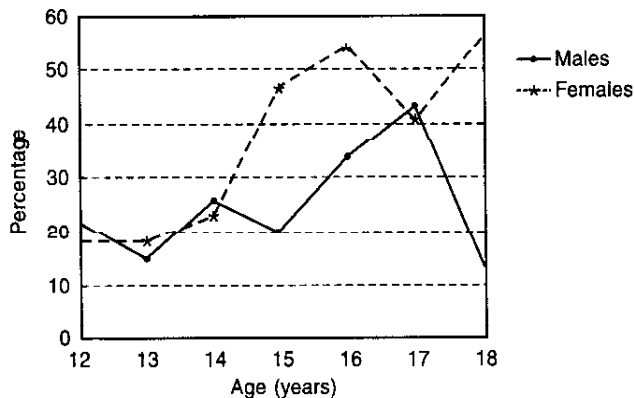

Figure 2 **Percentage of male and female adolescents who had backache once or more per week by age**

age and residence were analysed (Table 3). Female adolescents had significantly higher scores for feeling depressed, stress/psychic tension, lonely and strange than did males. Urban residents had significantly higher depressed and lonely scores than rural residents. Older adolescents had significantly higher scores for feeling depressed, stress/psychic tension, lonely, unwell and weak and strange than younger adolescents. Figures 4 and 5 show stress/psychic tension and depression scores by age and gender. Female adolescents had significantly higher scores than males.

Responses to daily dietary intake according to sex and residence were analysed
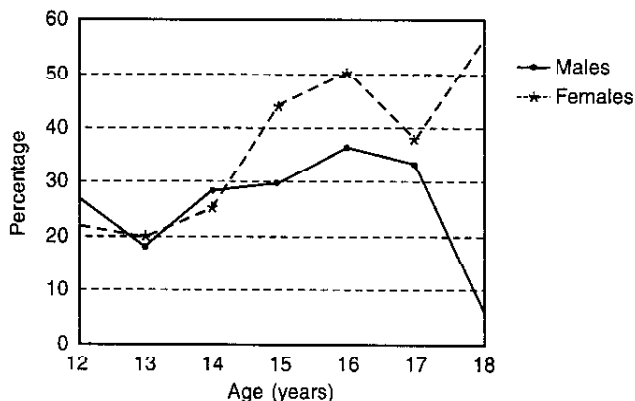
Figure 3 **Percentage of male and female adolescents who felt dizzy once or more per week by age**

(Table 4). The results showed that significantly more females have protein in their diet (76.3%), while more males drink tea (68.5%) and carbonated soft drinks (53.5%). Also, boys buy from street vendors more frequently (20.6%). More females (74.9%) clean their teeth daily than males. No differences were found for each of these items between ages 12 and 18 years, except in eating junk food where significantly more is eaten by younger ages than older. Significantly more urban resident adolescents have protein in their diet, eat *baladi* bread (local bread made from whole wheat) and drink carbonated soft drinks than those from rural areas, while significantly more rural adolescents drink tea and eat more often from street vendors than their urban counterparts. More urban residents brush their teeth than rural residents.

Responses to questions related to sports and leisure time activities showed that significantly more males play sports (82%) than females, with boys' favourite sport being football. Those aged 13–16 years are more active than other ages. During periods of leisure time, significantly more females (43.5%) than males read, watch television or help parents, while more males than females play. Reading and playing are more common among younger ages than older, with watching television and helping parents predominating in older age groups. Young men were more satisfied with their physical appearance than females.

We carried out logistic regression analysis of the most relevant factors to self-reported average/bad health versus very healthy/healthy (Table 5). From this analysis, self-reported average/bad health is mostly associated with being female, feeling dizzy, having high stress and depression scores and living with single parents or with relatives. Having a disease seemed not to be relevant.

Discussion

There is gender difference between adolescents regarding self-reporting of diverse physical symptoms of both physical and psychological ailments. Similar results have
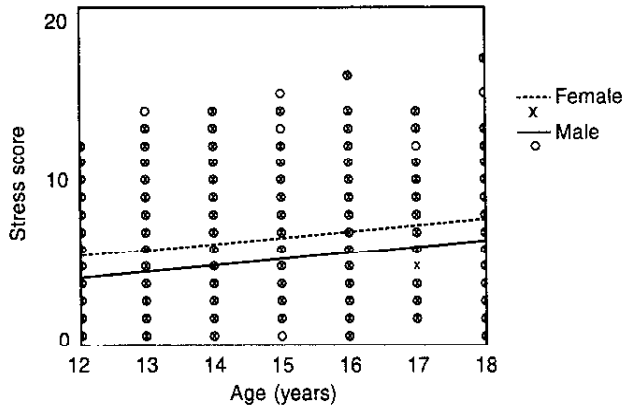
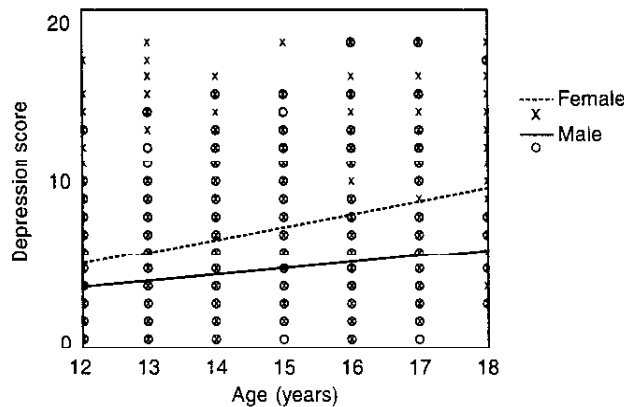Figure 4 **Stress score by age for male and female adolescents**

Figure 5 **Depression score by age for male and female adolescents**

been reported elsewhere [6]. Significantly more females suffer from weekly headaches, dizziness, abdominal pain, backaches, nervousness, sleep disturbance and morning tiredness. Also significantly, more females have higher scores of psychic tension and of feeling depressed. It is possible that some of the physical and psychological ailments reported are associated with pre-

menstrual syndrome or dysmenorrhoea [8], but the sociocultural environment also plays a very important role in gender health. Before birth, it is a boy child that is most commonly wished for. After birth, male infants are breastfed longer than females [9], and during the early years of life, boys are given greater priority in feeding than girls.

Table 4 **Types of food consumed and tooth-brushing practice of the adolescents according to sex and residence**

Variable	Fruits	Vege-tables	Protein	Brown bread	Tea	Carbonated soft drinks	Junk food	Food from street vendors	Tooth-brushing
Sex									
Male	85.6	88.3	70.3	86.1	68.5*	53.5*	60.2	20.6*	57.3
Female	82.4	86.6	76.3*	88.7	57.4	42.4	62.4	10.9	74.9*
Residence									
Rural	82.9	88.5	57.3	80.9	69.5	40.9	52.7	18.9	64.9
Urban	84.7	87.1	80.6*	90.4*	60.4*	52.0*	65.3*	8.3*	74.1*

Statistically significant at P < 0.05.
Figures show percentage of students.

Table 5 **Logistic regression analysis of the most relevant factors to self-reported average/bad health versus very healthy/healthy**

Variable	β-coefficient	P-value	Expected relative risk (95% confidence interval)
Age	−0.060	0.174	0.94 (0.87–1.03)
Sex	0.496	0.002	1.64 (1.19–2.23)
Residence	−0.439	0.008	0.64 (0.47–0.91)
Living with one parent	0.390	0.015	1.48 (1.08–2.02)
Disease	0.317	0.128	1.12 (0.88–2.01)
Feel dizzy	0.211	0.004	1.23 (1.09–1.39)
Depression	0.061	0.008	1.06 (1.01–1.11)
Stress	0.109	0.000	1.12 (1.05–1.18)

The National Survey of Egyptian Adolescents (NSEA) [*10*] also found, similar to our study, that more boys considered their health to be very good compared to girls. While no difference was found regarding bad health between the sexes, there are perhaps more reasons why female adolescents might report feelings of bad health, not least because of the previously-mentioned problems. Only 2.9% of boys and 5.0% of girls reported headaches in the NSEA [*10*], whereas a far greater number of adolescents in our study reported being affected by headaches (56.3% of males, 70.5% of females). This difference may be explained by the fact that data for the NSEA were collected from different sites in Egypt. It is possible that the environmental conditions

in Cairo and Qaliubiya are worse than the average of those in the NSEA. However, the Health of Youth survey also found headaches to be reported by a high percentage of 13- and 15-year-old girls (42% and 53%, respectively) across a number of countries [6]. This was also the case for other health problems that the NSEA found to be less prevalent than was the case in our study.

Most health problems begin to be significantly more commonly reported in girls than boys around the age of 15 years, which speaks either for hormonal changes or for the effect of sociocultural environment, or a combination of both.

In light of the statistic that 46% of Egyptian adolescents are anaemic (Nutrition Institute, Cairo, unpublished document 1998) and 56% have parasitic infestation [10], it is unsurprising that headache and feeling dizzy are commonly self-reported. It is obvious that different ailments or diseases have a different impact on perceived health. Despite the widespread reporting of headaches, it was not as relevant a factor in the regression analysis for reported average/bad health, while dizziness was important. Even "having a disease" was not significantly associated with perceived average/bad health, although "living with single parent" was significant. Like the Health of Youth survey [6], our study found that girls' dietary habits were healthier than boys in respect of eating less junk food, drinking less tea and carbonated soft drinks, consuming food less frequently from street vendors, and eating more pro-

tein. Adolescents who have already left school, or those already in the workforce may report different results.

Conclusion

Few strategies address adolescent health in a holistic way. Strategies for this age group usually focus on reproductive health, smoking and other drug addictions and criminality [1]. Adolescent health is the responsibility of the society, parents and adolescents themselves. Many health problems commonly occurring in adolescence can be prevented, with consequent reduction in intake of medications, improved quality of life and equally importantly, future savings in personal and state health expenditures. A basic tenet of effective health provision for both sexes is the need to "identify conflict between health promotion and cultural values" [11]. According to WHO, United Nations Population Fund and United Nations Children's Fund, building political commitment, assessing priorities for action, fostering adult–youth partnerships and establishing disaggregated indicators for monitoring and evaluation are important to prevent future health problems of adolescents [12]. The Egyptian Ministry of Health and Population has already stated its political commitment to adolescent health at the Conference on Adolescence held in May 1999. Awareness-raising of parents, teachers and adolescents is necessary to bring to their attention the relationship between adolescent health and gender.

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