PROGRESS IN MEDICAL SCIENCES, 2018
VOL 2, NO. 1, PAGE 1 – 8
DOI: doi.org/10.47363/PMS/2018(2)114

ORIGINAL ARTICLE

Open Access

Self-reported health profile of adolescents' school students in an Egyptian village

Hend Magdy Gomaa, Ragaa El-Masry, Farida Abdel-Wahab, Mohamed Eissa Ali
Department of Public Health and Community Medicine, Faculty of Medicine, Mansoura University, Egypt

ABSTRACT

Introduction: Although adolescents comprise a considerable portion of Egypt's population, they have received insufficient indicators of their health status, especially in rural areas.

Aim: This study was conducted to assess the health profile of adolescent school students and its associated socio-demographic factors in an Egyptian village.

Methods: A school-based cross-sectional study was conducted during the scholastic year 2016–2017 on 378 adolescent students recruited from preparatory and secondary schools in Tonnamel village, Egypt. A self-reported questionnaire was used to assess the socio-demographic characteristics and included the modified Child health and illness profile-Adolescent edition questionnaire.

Results: Health profile taxonomy and ranking revealed the worst health status as the most frequent one among students (69.6%). Age, gender, and mother education were significant predictors of health status whereas having illiterate mothers [p = 0.004, odds ratio (OR) = 4.3, and confidence interval (CI) = 1.62–11.9], being females (p = 0.003, OR = 2.54, and CI = 1.38–4.66) and older age group of 15–18 years (p = 0.02, OR = 2.23, and CI = 1.13–4.38) were significant risk factors for the poor to worst health among adolescents.

Conclusions: This study reflected the worst health status as the most frequent and highly prevalent health profile among the studied adolescent students. This is mostly related to age and sex of students and to the education of their mothers whereas being female, owning older age and illiterate mother were risk factors for worst health status of adolescents. Addressing the health characteristics of adolescents is valuable to tailor suitable and specific health improvement interventions.

ARTICLE HISTORY

Received August 25, 2018
Accepted September 24, 2018
Published September 27, 2018

KEYWORDS

Self-reported; health profile; school; adolescents' students; Egyptian village

Introduction

Adolescence, a time of opportunity, has gained increasing global attention. It is the transitional period from childhood to adulthood corresponding to the age of 10–19 years [1]. It is roughly corresponding to the age of onset of puberty and the onset of adult identity, respectively. It represents a critical period important for the future of both individuals and nations as it is characterized by many significant physical, biological, cognitive, psychological, social, emotional, and developmental changes [2,3]. In addition to experimentation, risk behaviors may begin. Because of the prevalent health risk behaviors and specific health problems, clinical guidelines and recommendations have been published to guide healthcare providers in screening practices and approach to adolescents. Leading global organizations and scientific journals have dedicated special reports or series to adolescence [2].

Improvement has been seen in public health with decreasing infant mortality rates and advances in prevention and treatment of communicable disease. During the same period, however, the burden of non-communicable disease (NCD) has been increasing, with 63% of global deaths being caused by NCD. Attention has, therefore, turned to how nations can advance efforts that impact the onset of risky behaviors associated with NCD. This has led to a focus on adolescence and the opportunities to promote health and prevent the onset of

Contact Ragaa El-Masry ragaaelmasry@yahoo.com Department of Public Health and Community Medicine, Faculty of Medicine, Mansoura University, Egypt.

risk behaviors known to persist into adulthood and result in morbidity and premature death [4].

About 88% of the world's adolescents live in developing countries with a considerable number living in the Arab world [5]. Despite the youth bulge witnessed in this region, national data sets on adolescents are lacking and there is a shortage of adolescent health services and programs. Furthermore, the research carried out in the region has generally excluded important aspects of adolescent health including alcohol/substance use and sexual/reproductive health because of cultural sensitivities and taboos associated with such issues [6].

It was reported that around 22% of the Egyptians are adolescents aged between 10 and 19 years. With the increasing burden of NCD, adolescence is viewed as an opportune time to prevent the onset of certain behaviors and promote healthy states [7].

Although adolescents comprise a considerable portion of Egypt's population, they have received insufficient attention and indicators of their health status, especially in rural areas. Also as schools were reported as a good place through which we can reach a large number of adolescents and promote health, apply preventive measures, and communicate values and information to the community at large, including families, friends, and neighbors [8]. Thus, we decided to conduct the present study aiming to assess the health profile of adolescent school students and its associated socio-demographic factors in an Egyptian village in order to spot the light on the health of this cohort believing that this will help to reduce adolescents' health problems and promote their health status. In addition, this study was carried out on adolescent scholars also to assess their nutritional health status, Identify their lifestyle, social and behavioral health problems as well as the most common problems that could affect their life as specific hypotheses.

Subjects and Methods

Study location

The study was conducted in Tonnamel village, located 30 km south to Mansoura city, Egypt. The village has four preparatory and two secondary schools. The preparatory schools include 974 students while the secondary schools contain 358 students.

Study design

This is a school-based cross-sectional study that was conducted during the scholastic year 2016–2017 on adolescent students in Tonnamel village, Egypt.

Study population

The study population was a sample of adolescent students who join Tonnamel preparatory and secondary schools. The eligible students were adolescents aged 11–18 years of both male and female and accepted sharing in the study.

Sample size

Based on the total number of registered preparatory and secondary schools students (1,332) in Tonnamel village, Egypt, during the scholastic year 2016–2017 (according to the Directorate of education), and, due to the paucity of data regarding the self-reported health profile among adolescents, we assumed that the most possible statistically conservative response distribution of poor health status was 50%. To capture a representative sample of the Tonnamel adolescent school students (1,332) with 95% confidence level and a 5% margin of error using Raosoft Inc software sample size calculator, the final total has to be at least 329 students after adding 10% to the estimated sample size to overcome the non-responders.

Sampling technique

All the previously mentioned preparatory and secondary schools in Tonnamel village were included to obtain the estimated sample size. Students were selected through stratified cluster sampling technique. First, students were stratified into different academic years (first to third) in both preparatory and secondary schools. Then a cluster (a class) was randomly chosen from each grade with a total of six clusters from preparatory schools and 12 clusters from secondary schools. All students in the selected clusters were targeted with a final total of 378 students were responding in the selected clusters. None participation was due to lack of interest in the study, absence during the study period and incomplete questionnaires.

Study tools

Data were collected using two parts of the self-administered questionnaire. Part I covered the socio-demographic information. Part II was the modified child health and illness profile—Adolescent Edition (CHIP-AE) questionnaire [9]. CHIP-AE has a conceptual framework including six domains. Within the developmental context of

adolescence, the instrument measures perceived well-being, symptoms, states, and behaviors that are known to reduce or increase the likelihood of future health, the burden of morbidity, physical, emotional, and social functioning. The six included domains were:

1. Satisfaction domain measures the students' perceptions of well-being and self-esteem as well as the respondents' overall perceptions of their own health and attitudes. Some modifications were done for the questions and the new cutoff points for our modified questionnaire was 17.64.
2. Discomfort domain asks about symptoms that would generally interfere with comfort or a sense of well-being and positive health perceptions within the past 4 weeks and two questions were asking about frequency of vomiting on purpose to lose weight and going on an eating binge in the past 12 months. Some modifications were done for the questions and the new cutoff points for our modified questionnaire was 119.83.
3. Resilience domain assesses aspects of positive health characterized by the existence of resources and patterns of behavior; it also captures phenomena that are known to be related to the capacity to resist threats to well-being that inevitably arise in the course of the lifespan. Some modifications were done for the questions and the new cutoff points for our modified questionnaire was 1.59.
4. Risks domain which is the converse of the resilience domain. Some modifications were done for the questions and the new cutoff points for our modified questionnaire was 77.88.
5. Disorders domain includes the biomedically defined states of physical and mental ill-health. Some modifications were done for the questions and the new cutoff points for our modified questionnaire was 45.55.
6. Achievements domain reflects the state of development of the individual and consists of work and school accomplishments. Some modifications were done and the new cutoff points for our modified questionnaire was 16.93.

The questionnaire was developed first in English and was translated into Arabic by a bilingual Egyptian researcher. Then it was back-translated into English by another translator who has no knowledge of the English version when the similar translation was obtained. The content validity of questionnaires was assessed by a group of 10 experts in the field of public health, and finally, the Arabic version of the questionnaire was pilot tested on a group of 20 students (they were excluded from the full-scale study), then modifications were done accordingly. The Cronbach's alpha internal consistency was calculated to be 0.79 and content validity index ranged from 0.71 to 0.90 for different items.

Regarding the questionnaire scoring, health profile classification was determined using the original guidelines given by Alonso et al. [9], but with our new modified cutoff points. The original cutoff point was calculated depending on the arbitrary cutoff point calculated as 0.6 standard deviations (SD) of mean subtracted from mean for (satisfaction and resilience scores) and added to mean for (discomfort, risks, disorders, and achievements scores). If total score for any domain was more than the arbitrary cutoff point, it is considered good health while it was considered poor health if the total score on that domain was less than or equal to an arbitrary cutoff point. Then health profile Taxonomy was classified according to the guidelines of Riley et al. [10]. Then, according to Kools et al. [11], the health profile taxonomy was ranked.

Data management

The collected data were coded, processed, and analyzed using the SPSS program (version 20). Qualitative data were described using number and percent. Quantitative data were described using median (minimum and maximum) for nonparametric data and mean ± SD for parametric data after testing normality using Kolmogorov–Smirnov test.

Crowding index was calculated and classified according to Fahmy and El-Sherbini [12] scale as follows. Uncrowded: ≤1 person/room; Crowded: two to three persons/room; and Very crowded: >3 persons/room.

Chi-square and Fischer exact tests were used for comparison. The significance of the results was judged at 5% level.Binary stepwise logistic regression analysis was used for prediction of independent variables of poor health status. Significant predictors in the bivariate analysis were entered into regression model using forward Wald method. Adjusted odds ratios (AORs) and their 95% confidence interval were calculated.

Table 1. Self-reported health status of studied adolescent students.

Self-reported health profile	*N* = 378	%
Satisfaction		
Poor health	82	21.7
Good health	296	78.3
Discomfort		
Poor health	222	58.7
Good health	156	41.3
Resilience		
Poor health	129	34.1
Good health	249	65.9
Risks		
High risk	125	33.1
Low risk	253	66.9
Disorders		
Poor health	257	68.0
Good health	121	32.0
Achievements		
Poor health	251	66.4
Good health	127	33.6

Ethical considerations

This study was approved by the Institution Research Board of Mansoura Faculty of Medicine and the school's authorities. An informed verbal consent was obtained from each participant sharing in the study. Confidentiality and personal privacy were respected at all levels of the study as well as the collected data will not be used for any other purpose.

Results

The mean age of studied students in years was 13.75 ± 1.89. Students aged 11–15 years formed 63.8%. Most of them had crowded living condition and 66.7% were males. Unfortunately, most of our students' parents were illiterate or with primary education (45.8% of fathers and 65.9% of mothers). The majority of the students' mothers (70.4%) were nonworking and 75.1% of their fathers were manual workers (data not shown in the table).

Table 1 shows that good health was self-reported by students on the following domains: satisfaction (78.3%), discomfort (41.3%), resilience (65.9%), risks (66.9%), disorders (32.0%), and achievements (33.6%).

Table 2 shows the self-reported health profile taxonomy among the studied students where 69.6% of them had worst health status, 58.7% expressed high discomfort, 34.1% were with low resilience, 33.1% revealed high risks, and 21.7% were dissatisfied.

Table 2. Self-reported health profile taxonomy among the studied adolescent students.

	Health profile taxonomy	*N* = 378	%
A	Excellent health	10	2.6
B	Good health	20	5.3
C	Dissatisfied	82	21.7
D	High discomfort	222	58.7
E	Low resilience	129	34.1
F	High risks	125	33.1
G	Dissatisfied/high discomfort	5	1.3
H	Dissatisfied/low resilience	1	0.26
I	Dissatisfied/high risks	3	0.7
J	Discomfort/low resilience	1	0.26
K	Discomfort/high risks	2	0.53
L	Low resilience/high risks	1	0.26
M	Worst health	263	69.6

Figure 1 displays the ranking of self-reported health profile status among the studied students whereas the worst health status was the most frequent (69.6%) followed by fair health status (19.0%) and best health status (7.9%) while poor health status was the least one (3.4%).

Table 3 illustrates that poor health status had a significantly higher percentage of the older age of 15–18 years old and female students compared to those with fair to best health status (p = 0.03 and 0.001, respectively). Also, the socio-demographic characteristics of studied adolescent students revealed that having illiterate and nonworking mothers were significantly higher among students ranked with poor to worst health status in comparison to those with fair to best health status (p = 0.01 and 0.048 respectively).

Logistic regression analysis in Table 4 shows that age, gender, and maternal education were predictors of health status whereas having illiterate mothers (AOR = 4.3), being females (AOR = 2.54), and older age group of 15–18 years (AOR = 2.23) were significant risk factors for poor health status.

Discussion

Up to our knowledge, this study is the first to measure the health of apparently healthy adolescent using a self-administered and generic health status instrument that uses a comprehensive conceptualization of adolescent health. Health profile-types provide a summary method for describing distinct patterns of health that characterize subgroups of a population. The present study showed that the most frequently occurring types of 13 health profile taxonomy of our studied sample were worst health (69.9%), high discomfort (58.7%), low resilience

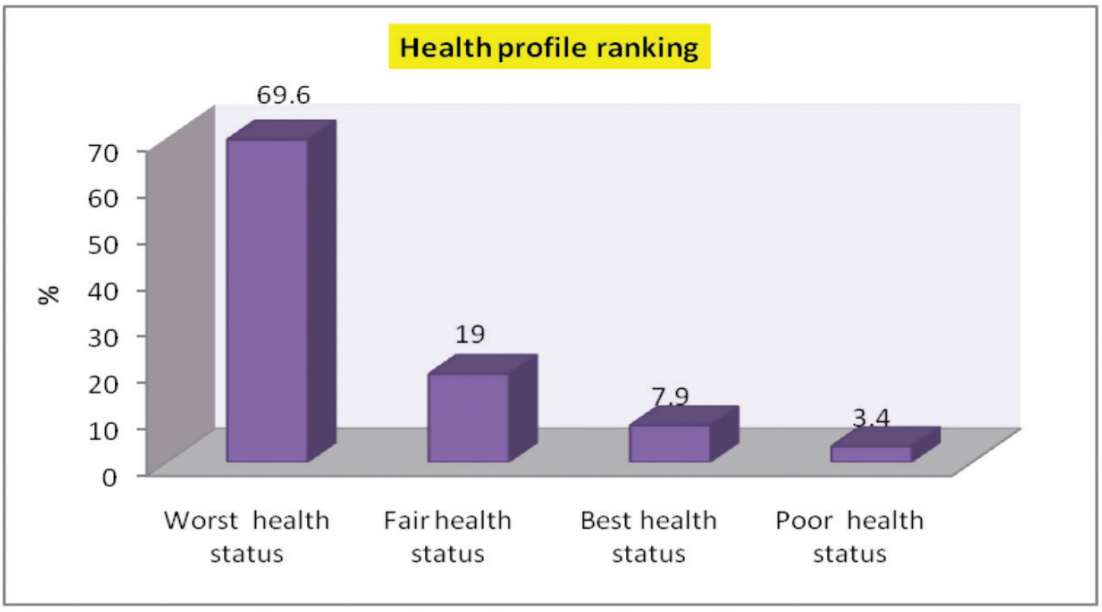

Figure 1. Health profile ranking among the studied adolescent students.

Table 3. Univariate analysis of the socio-demographic predictors of self-reported health profile ranking among the studied adolescent students.

Characteristic	Fair to best health status *N* = 102 *n* (%)	Poor to worst health status *N* = 276 *n* (%)	*p*-value	OR (95% CI)
Age (years)				
11–15	74 (72.5)	167 (60.5)	----------	1 (r)
15–18	28 (27.5)	109 (39.5)	0.03*	1.7 (1.05–2.8)
Sex				
Male	85 (83.3)	167 (60.5)	----------	1 (r)
Female	17 (16.7)	109 (39.5)	0.001**	3.26 (1.84–5.8)
Crowdedness index				
Uncrowded	1 (1.0)	1 (0.4)	----------	1 (r)
Crowded	100 (98.0)	272 (98.6)	0.47	2.72 (0.17–43.9)
Very crowded	1 (1.0)	3 (1.1)	1.0	3.0 (0.08–107.5)
Father education				
Illiterate or primary	49 (48.0)	124 (44.9)	0.76	1.09 (0.6–1.9)
Secondary school	30 (29.4)	99 (35.9)	0.27	1.4 (0.76–2.7)
High education	23 (22.5)	53 (19.2)	----------	1 (r)
Mother education				
Illiterate or primary	50 (49.0)	199 (72.1)	0.01*	2.09 (1.1–3.8)
Secondary school	31 (30.4)	37 (13.4)	0.19	0.6 (0.31–1.3)
High education	21 (20.6)	40 (14.5)	----------	1 (r)
Mother occupation				
Not working	64 (62.7)	202 (73.2)	0.048*	1.6 (1.01–2.6)
Working	38 (37.3)	74 (26.8)	----------	1 (r)
Father occupation				
Not working	0 (0.0)	3 (1.1)	0.55	Undefined
Manual worker	75 (73.5)	209 (75.7)	0.54	1.17 (0.69–1.98)
Employee	27 (26.5)	64 (23.2)	----------	1 (r)

r = reference group. *Significant level: *p*-value ≤ 0.05. **Highly significant: *p*-value ≤ 0.001.

(34.1%), and high risks (33.1%). A previous study carried out on adolescents of foster care in three Northern California counties with urban and suburban populations to compare their health status with health status of school-based sample, whereas the adolescents in foster care showed that excellent health status was the most frequent (21.4%) followed by good health (17.6%) then worst health

Table 4. Binary logistic regression analysis of the socio-demographic predictors of worst health status among the studied adolescent students.

Predictor(s)	β	*p*-value	AOR (95% CI)
Age (years)			
11–15	----------	----------	1 (r)
15–18	0.8	0.02*	2.23 (1.13–4.38)
Sex			
Male	----------	----------	1 (r)
Female	0.93	0.003**	2.54 (1.38-4.66)
Mother education			
Illiterate or primary	1.48	0.004**	4.3 (1.62–11.9)
Secondary school	0.19	0.68	1.2 (0.49–3.0)
High education	----------	----------	1 (r)
Mother occupation			
Not working	−0.37	0.29	0.69 (0.35–1.38)
Working	----------	----------	1 (r)

r = reference group. *Significant level: *p*-value ≤ 0.05. **Highly significant: *p*-value ≤ 0.001. Constant = 1.05; Model Chi-Square test = 112.14; *p* = 0.001**; Percent predicted = 78.6%.

(13.0%), and finally 12.2% with high risks [11]. Furthermore, a validation study of CHIP-AE instrument that was tested in four ethnically diverse population samples of urban and rural youths aged 11–17 years old in public schools found that the most frequent health status was good health (28.4%), followed by excellent health (14.3%) and 10.3% with worst health 10.3% [10]. Another cross-sectional study was conducted on 1,453 Spanish adolescents revealed that the largest group of adolescents was of excellent or good health status (43.4%) *versus* only 11.2% who were in worst health profile [9].

Ranking of self-reported health status in the present study showed that the most frequent health status was ordered as worst health status (69.6%), fair health status (19.0%), best health status (7.9%), and poor health status (3.4%). On the contrary, a study carried out in the US showed that the most frequent health status was best (38.9%), fair (30.5%), poor (17.6%), and 13.0% worst [11].

The socio-demographic characteristics of the studied adolescent in the present study revealed that older age, being female and having illiterate or nonworking mothers were significantly higher among students ranked with poor to worst health status. An American study reported in his study a statistically significant association between poor to worst health status ranking and older age adolescents with >15 years old [11]. However, the regression analysis applied in our study emphasized that only having illiterate mothers (AOR = 4.3), being females (AOR = 2.54), and older age (AOR = 2.23) were significant predictors for poor health status among the studied adolescents. This was more or less comes in agreement with the results of the study by Alonso et al. [9] that reported females and old age >15 years as predictors of adolescents' worst health status [9]. Females are constantly in a worse position than males and older age groups are worse than younger ones [13]. Education could be related to increased productivity, better methods of feeding, and the use of health-care facilities [14,15]. Less educated mothers are less aware with personal hygiene and promotive as well as curative healthcare than that of more educated women. Education can also enable the mother to make independent choices and to secure household income that may have a good impact on family health. Studying health and well-being differences in adolescence is also important in clarifying how the adjustment of the different genders to the developmental task is defined. In fact, many researchers [16,17] have shown an inversion in the trend according to which males are less healthy than females during infancy, while the opposite is true for adolescents. This fact may suggest that some important changes, connected with gender constructs, come along with puberty [16]; in particular, it is suggested that different attitudes toward internalizing and externalizing patterns of response to the environment are implied [18,19].

Limitations

This study carried some limitations, first was the self-reported health profile information provided by students; therefore, there could be some potential for reporting bias which may simply occur due to inaccuracies of responses or because of the

respondents' interpretation of the questions or desire to report their emotions in a certain way. Another limitation was that the study took place at only one village; this could affect the generalization of its results to other Egyptian localities. Furthermore, this study was done during the scholastic year with the possible negative effects of study course on the health status of students which may differ during vacation. Despite these limitations, this study is the first one to measure the health of that apparently healthy vulnerable group of students who will represent the future youth in Egypt. It also provides baseline data for further study in different localities of Egypt in order to design comprehensive intervention that could deal with adolescents' health.

Conclusions

In conclusion, the health profile ranking in this study reflected that worst health status was the most frequent and highly prevalent among the studied adolescent students. This is mostly related to age and sex of students and to the education of their mothers whereas being female, owning older age and illiterate mother were risk factors for the worst health status of adolescents. Addressing the health characteristics of adolescents as one of the most vulnerable subgroups of students is valuable to tailor suitable and specific interventions that could help to improve their health and satisfy their needs. School health authority has to pay attention to students at the risk of worse health status based on the mentioned risk factors. Cooperation of teachers is essential for daily observation of students. There is a need for a comprehensive study to explore the socio-cultural, behavioral, and educational factors behind this high rate of worth health status. However, the study has the limitation of being a local study in one village on school students. Its results cannot be generalized all over the country. A large-scale community-based study is advocated to give the full picture of the situation. Also, it is possible that there is over estimation of the worst health status by students due to the social desirability with current economic crises in Egypt and its reflection on health status.

Conflict of interest

All the authors declare no any competing interest for whatsoever.

References

[1] WHO. Health for the World's Adolescents: a second chance in the second decade. Department of Maternal, Newborn, Child and Adolescent Health, Geneva, Switzerland, 2014.

[2] AlBuhairan F, Areemit R, Harrison A, Kaufman M. Adolescent psychosocial development and evaluation: global perspectives. Compl Pediatr 2012; 179–202. Available via www.intechopen.com

[3] Dick B, Ferguson BJ. Health for the World's Adolescents: a second chance in the second decade. J Adolesc Health 2015; 56(1):3–6.

[4] Catalano RF, Fagan A, Gavin L. Worldwide application of prevention science in adolescent health. Lancet 2012; 379:1653–64.

[5] United Nations Children Fund. The state of the world's children: adolescence an age of opportunity. 2013. Available via http://www.unicef.org/

[6] Obermeyer CM, Bott S, Sassine AJ. Arab adolescents: health, gender, and social context. J Adolesc Health 2015; 57:252–62.

[7] Central Agency for Population Mobilization and Statistics. Survey of young people in Egypt. Final Report Population Council West Asia and North Africa Office, 2011. Available via http://www.popcouncil.org/projects/SYPE/index.asp

[8] Al-Makadma AK. Adolescent health and health care in the Arab Gulf countries: today's needs and tomorrow's challenges. Int J Pediatr Adolesc Med 2017; 4(1):1–8.

[9] Alonso J, Urzola D, Sutton VS, Tebé C, Starfield B, Riely AW, Rajmil L. Validity of the health profile-types of the Spanish Child Health and Illness Profile-Adolescent Edition (CHIP-AE). Value Health 2008; 11(3):440–9.

[10] Riley W, Christopher B, Forrestm D, Tarfieldm B, Green B, Kang M, et al. Reliability and validity of the adolescent health profile-types. Med Care 1998; 36(8):1237–48.

[11] Kools S, Paul SM, Jones R, Monasterio E, Norbeck J. Health profiles of adolescents in foster care. J Pediatr Nurs 2013; 28(3):213–22.

[12] Fahmy S, El-Sherbini A. Determining simple parameters for social classification for health research. Bull High Institute Public Health 1983; 13(5):95–107.

[13] Cavallo F, Zambon A, Borraccino A, Raven-Sieberer U, Torsheim T, Lemma P. Girls growing through adolescence have a higher risk of poor health. Qual Life Res 2006; 15:1577–85.

[14] Shah SM, Selwyn BJ, Luby S, Merchant A, Bano R. Prevalence and correlates of stunting among children in rural Pakistan. Pediatr Int 2003; 45:49e53.

[15] Bepari M, Pal A, Maity P, Maiti Choudhury S. Nutritional and health status of adult women of the Lodha tribal population of Paschim Midnapore, West Bengal, India: compared with non-tribal women. East Afr J Public Health 2015; 12(1):988e96.

[16] Bisegger C, Cloetta B, von Rueden U, Abel T, Ravens-Sieberer U; European Kidscreen Group. Health-related quality of life: gender differences in childhood and adolescence. Soz Praeventivmed 2005; 50:281–91.

[17] Benjet C, Hernandez-Guzman L. A short-term longitudinal study of pubertal change, gender, and psychological well-being of Mexican early adolescents. J Youth Adolesc 2002; 31:429–42.

[18] Raety LK, Larsson G, Soederfeldt BA, Larsson BM. Psychosocial aspects of health in adolescence: The influence of gender, and general self-concept. J Adolesc Health 2005; 36(6):530.

[19] Yarcheski A, Mahon NE, Yarcheski TJ. Anger in early adolescent boys and girls with health manifestations. Nurs Res 2002; 51:229–36.