Assessment of self-awareness among rural adolescents: A cross-sectional study

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ABSTRACT

Context: Adolescence is a period of biological, cognitive and social transition of such magnitude and rapidity that it is no surprise to find that it is associated with the onset or exacerbation of a number of health-related problems. It is the level of self-awareness among adolescents, which enables them to see where their thoughts and emotions take them. Aims: The aim of this study was to assess the extent of awareness regarding adolescent changes/problems among school going adolescents. Settings and Design: It was a cross-sectional study and was carried out in Block Beri, District, Jhajjar (Haryana). Materials and Methods: A sample of 320 adolescent students of 9th-12th classes (80 from each school) were selected from four randomly chosen large Government senior secondary schools with strength of more than 250 students (two girls and two boys/co-ed senior secondary schools). Data were collected on predesigned, pre-tested and semi-structured schedules by conducting in-depth interviews of selected study adolescents by the investigator. Statistical Analysis Used: Percentages, proportions, Chi-square test, Chi-square test with Yate’s correction and t-test. Results: Out of 320, 212 (66.3%) study adolescents were aware of at least one adolescent change(s) whereas, when probed and further asked to enumerate the changes taking place in them, 272/320 (85%) adolescents could narrate at least one such change. Out of those 272, 24 (8.82%) (95% CI 6.0-12.79) adolescents either did not consider these changes as normal or they did not know whether the changes were normal or abnormal. Conclusions: Adolescents greatly lack correct information related to their bodies' physiological, psychological and sexual changes. There is an urgent need for regular adolescent friendly information, education and communication activities covering different aspects of adolescent knowledge needs/problems.

Key words: Adolescents, awareness, changes, knowledge, school, self

INTRODUCTION

The World Health Organization defines adolescents as young people aged 10-19 years.[1] Adolescents are an important asset of a country because they will become tomorrow’s young men and women and will provide the human potential required for the country’s development. There are about 1.2 billion adolescents, one-fifth of the world’s population and their number is increasing. Four out of five live in developing countries.[1] Adolescence is a period of biological, cognitive and social transition of such magnitude and rapidity that it is no surprise to find that it is associated with the onset or exacerbation of a number of health-related problems including depression,[3] eating disorders,[3] substance abuse and dependence,[4-6] risky sexual behavior,[7] antisocial and delinquent activity[8] and school dropout.[9] Many of the behavioral patterns acquired during adolescence (such as gender relations, sexual conduct, use of tobacco, alcohol and other drugs, eating habits and dealing with conflicts and risks) will last a lifetime.[10]

It is the level of self-awareness among adolescents, which enables them to see where their thoughts and emotions take them. Thus, an assessment of self-awareness among adolescents is required, which will help in making the desired changes in the thoughts and interpretations they
make in their minds and hence in their behavior. The results of a study carried out by Shiel, et al. showed that awareness about menstrual changes was 66.1% among the girls.[10] In another study conducted by Ahuja and Tewari, awareness levels regarding the changes were found to be low i.e., ~28%.[11] In a quantitative survey, results showed that 69.8% male and 52.3% female adolescents perceived physical changes whereas, 5.5% males and 66.1% females adolescents were aware of sexual changes.[12] Lot of emphasis had been given to adolescents and programs focused on adolescent friendly services for their guidance and overall development.[13] However, perhaps all such efforts seemed only theoretical. The study was conducted with the objective to assess the extent of awareness regarding adolescent changes/problems among school going adolescents.

**Materials and Methods**

It was a cross-sectional study and was carried out in Block Beri, District, Jhajjar (Haryana), which is the rural field practice area attached to Department of Community Medicine, Pt BD Sharma Post Graduate Institute of Medical Sciences, Rohtak (Haryana). Considering issues of non-responses and less distinct visibility of the changes in early than in late adolescence, the study was conducted in elder adolescents i.e., those belonging to mid (13-15 years of age) and late adolescence (15-19 years).[1] Hence, the study population comprised of the adolescents (both male and female) in the age group 13-19 years and studying in Government schools located in Block Beri. According to the office records of block education officer Beri, there are 7 Government high schools and 19 Government senior secondary schools located in the block. As on 31st March, 2009, at the time of planning for the study, the population of the block was 149,604 as per routine survey conducted by multipurpose health workers of the area. The adolescent population in the block was estimated to be approximately 32,900.

**Sample size and sampling design**

At any given absolute error, sample size is maximum for a probability of 0.5 (i.e., prevalence of 50%) for the positive outcome. Hence, assuming the prevalence of awareness among adolescents regarding adolescent changes as 50%, confidence interval (CI) of 95% and acceptable absolute error of 6%, sample size was calculated to be 278. To cover the assumed risk of non-response of up to 10% among the adolescents, the sample size was arrived at 306. Hence, a rounded figure of 320 higher than the calculated sample size was chosen as the final sample size of the adolescent students.

The study adolescents were selected in two stages i.e., firstly the schools were selected and then equal number of adolescents were selected from all the senior classes i.e., 9th to 12th where the students of the required adolescent age group are likely to be enrolled. Adolescents from the two strata of girls’ and boys’ schools were selected separately to eliminate the possible variability in awareness levels among adolescents of two sexes i.e., male and female. Because of the reason that the majority of the adolescents would be found in large schools and feasibility/approachability reasons, out of the total seven Government high schools and 19 Government senior secondary schools located in the block, four large schools with strength of more than 250 students (two girls and two boys/co-ed senior secondary schools) were randomly selected by lottery technique. Hence, to have the above calculated sample of 320, adolescent students of 9th to 12th classes (80 from each school) were selected from these schools by stratified random sampling to include both sexes and from each selected class equally. The adolescent students were selected from each class by the simple random sampling, using the students’ attendance register until the desired sample from each class was met. Attempt was made to include all the three social classes i.e., scheduled castes, backward classes and other castes proportionately from each class in order to consider the possible variations. To further minimize sampling bias, it was also decided that if the desired number of students was not available from any class then students from the subsequent school from the same class would be enrolled in the study to achieve the required sample size. However as the desired numbers of adolescents were available from the selected four schools only, no adolescent from the subsequent school was needed to be enrolled.

**Inclusion criteria**

Adolescents (both male and female) who had completed 13 years of age and apparently healthy were included in the study.

**Exclusion criteria**

If a designated subject could not be contacted or was not cooperative or not willing to give consent during the three separate consecutive visits, the subject was considered as a “non-respondent” and was excluded from the study.

**Data collection**

Data were collected on predesigned, pre-tested and semi-structured schedules by conducting face-to-face in-depth interviews of selected study adolescents by the investigator himself and after obtaining the informed consent from the concerned adolescents and heads of schools. Interviews were scheduled with prior coordination with Principals of respective schools. Every effort was
made to schedule an interview of study participants in such a way that the teaching work in the schools or the work of other selected participants would not suffer.

Data compilation and analysis
Data were pre-coded according to participants’ responses and entered in anonymous form in MS Excel and was later converted into statistical software for ease of analysis. Keeping in view the aims and objectives of the study, the blinded data were then analyzed and interpreted. Ethical approval and prior permission to carry out the study was sought from Institutional Post Graduate Board of Studies.

RESULTS
All the selected study adolescents were interviewed and the response rate was 100%. Mean age of male adolescents (15.65 years) was slightly higher as compared with that of females (15.02 years) with the overall combined mean age of 15.33 years as shown in the Table 1. Fathers of 66/320 (20.6%) adolescents and mothers of 165/320 (51.6%) of them were illiterate. Literacy of the fathers of 107/320 (33.4%) and 130/320 (40.6%) adolescents was below matriculate level or matriculate respectively. Fathers or mothers of only 17/320 (5.3%) and 5/320 (1.6%) adolescents respectively had attained literacy up to graduate level or above. The occupation of the fathers of 107/320 (33.4%) and 130/320 (40.6%) adolescents was agriculture or labor respectively while mothers were house wives in 259/320 (80.9%) cases.

As is evident in Table 2, 212/320 (66.3%) study adolescents were aware of at least one adolescent change(s) whereas, when probed and further asked to enumerate the changes taking place in them, 272/320 (85%) adolescents could narrate at least one such change. Similarly, the larger number of adolescents was able to narrate various types of changes when asked about the changes, which occurred in them as shown in Tables 2 and 3. Table 4 shows that 248/272 (89.18%) (95% CI 87.21-94.0) adolescents perceived those changes as “normal” and on the contrary 24/272 (8.82%) (95% CI 6.0-12.79) adolescents either did not consider these changes as normal or they did not know whether the changes were normal or abnormal.

DISCUSSION
The study population in the area was homogenous having almost the similar living conditions with a considerable uniform pattern of cultural beliefs. The above mentioned findings in Tables 2 and 3 showed that they did not have desired knowledge about the changes and were able to perceive the change(s) only when specifically probed and asked about themselves. Furthermore, the various types of the changes were not known to the study adolescents. As presented in the Tables 2 and 3, 178/320 (55.63%) (95% CI: 50.15-60.97) adolescents could tell at least one physical change, which occur in adolescence while 225/320 (70.31%) (95% CI: 65.09-75.05) admitted that physical change(s) had occurred in them. Similarly, 151/320 (47.19%) (95% CI 41.78-52.66) of the adolescents could name at least one sexual developmental change during this age and 157/320 (49.1%) (95% CI 43.63-54.52) could recognize the sexual developmental changes occurring in

Table 1: Socio-demographic profile of the selected adolescents

| Class      | Male (n=160) | Female (n=160) | Total (N=320) | P value |
|------------|-------------|---------------|---------------|---------|
| Age (in years) | 15.65 (SD 1.333) | 15.02 (SD 1.305) | 15.33 (SD 1.354) | <0.05*  |
| Class      | Male | Female | Total | P value |
| Ninth      | 40   | 40    | 80    | 1.000† |
| Tenth      | 40   | 40    | 80    |        |
| Eleventh   | 40   | 40    | 80    |        |
| Twelfth    | 40   | 40    | 80    |        |
| Total      | 160  | 160   | 320   |        |

* t test was applied, †Chi-square test was applied, ‡Chi-square test with Yate’s correction was applied, SD: Standard deviation

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**Table 2: Awareness of adolescents regarding changes, which occur during the adolescent period**

| Awareness                                | Male (n=160) (%) | Female (n=160) (%) | Total (N=320) (%) | P value |
|------------------------------------------|------------------|--------------------|-------------------|---------|
| Regarding any change                     |                  |                    |                   |         |
| Aware*                                   | 98 (61.3)        | 114 (71.2)         | 212 (66.3)        | 0.059   |
| CI: 53.52-68.45                         | Cl: 63.80-77.70  | Cl: 60.90-71.21   |                   |         |
| Not aware                                | 62 (38.7)        | 46 (28.8)          | 108 (33.7)        |         |
| Total                                    | 160              | 160                | 320               |         |
| Regarding various types of changes       |                  |                    |                   |         |
| Physical changes†                       | 80 (50)          | 98 (61.25)         | 178 (55.63)       | 0.043   |
| CI: 41.34-57.66                         | Cl: 53.52-68.45  | Cl: 50.15-60.97   |                   |         |
| Sexual developmental changes†            | 49 (30.63)       | 102 (63.75)        | 151 (47.19)       | <0.000  |
| CI: 24.01-38.15                         | Cl: 56.06-70.80  | Cl: 41.78-52.66   |                   |         |
| Emotional/social changes§                | 17 (10.63)       | 6 (3.75)           | 23 (7.19)         | 0.017   |
| CI: 6.74-16.36                          | Cl: 1.73-7.94    | Cl: 4.84-10.55    |                   |         |

*Aware: If the adolescent could mention at least one change occurring during the adolescent period, he/she was considered as “aware” of adolescent changes, †Physical changes - Boys: Growth spurt, development of muscles, oily skin, broadening of shoulders, cracking of voice, appearance of underarm hair, chest hair, pubic hair, facial hair, enlargement of penis and testes, Girls: Growth spurt, development of breasts, oily skin, widening of hips, appearance of under arm hair, pubic hair, enlargement of external genitals, enlargement of the uterus and ovaries, ‡Sexual developmental changes - Enlargement and maturation of sexual organs, erections in boys, sexual desire, sexual attraction, menarche, ovulation, sperm production, ejaculation, initiation of sexual behavior, §Emotional/social changes - Preoccupied with curiosity, inquisitive, progression from concrete thinking to abstract thinking, self-exploration and evaluation, conflicts with family over control, seek affiliation to counter instability, peer-group defines their behaviors, formation of new relationships, CI: Confidence interval

**Table 3: Perception of adolescents regarding changes taking place in them**

| Perception                              | Male (n=160) (%) | Female (n=160) (%) | Total (N=320) (%) | P value |
|------------------------------------------|------------------|--------------------|-------------------|---------|
| Regarding any change taking place in them |                  |                    |                   |         |
| Perceived                                | 128 (80)         | 144 (90)           | 272 (85)          | <0.012  |
| CI: 73.13-85.46                         | Cl: 84.37-93.75  | Cl: 80.67-88.50   |                   |         |
| Not perceived                            | 32 (20)          | 16 (10)            | 48 (15)           |         |
| Total                                    | 160              | 160                | 320               |         |
| Regarding various types of changes       |                  |                    |                   |         |
| Physical changes*                        | 121 (75.65)      | 104 (65)           | 225 (70.31)       | 0.038   |
| CI: 68.42-81.63                         | Cl: 57.34-71.96  | Cl: 65.09-75.05   |                   |         |
| Sexual developmental changes*            | 53 (33.13)       | 104 (65)           | 157 (49.06)       | <0.00   |
| CI: 26.30-40.74                         | Cl: 57.34-71.96  | Cl: 43.63-54.52   |                   |         |
| Emotional/social changes§                | 21 (13.13)       | 11 (6.88)          | 32 (10)           | 0.06    |
| CI: 8.75-19.23                          | Cl: 3.88-11.89   | Cl: 7.77-13.78    |                   |         |

*Aware: If the adolescent could mention at least one change occurring during the adolescent period, he/she was considered as “aware” of adolescent changes, †Chi-square test was applied, df=1, CI: Confidence interval

**Table 4: Orientation of adolescents regarding the changes perceived to have occurred in them**

| Perceived as | Male (n=128)* | Female (n=144)* | Total (n=272)* | P value |
|--------------|---------------|-----------------|               |---------|
| Normal       | 111 (86.72)   | 137 (95.14)     | 248 (91.8)    | 0.015†  |
| CI: 79.76-91.54 | Cl: 90.31-97.63 | Cl: 87.21-94.0   |               |         |
| Not normal   | 17 (13.28)    | 7 (4.86)        | 24 (8.2)      |         |
| CI: 8.46-20.24 | Cl: 2.37-9.69  | Cl: 6.0-12.79   |               |         |
| Total        | 128 (100)     | 144 (100)       | 272 (100)     |         |

*Aware: If the adolescent could mention at least one change occurring during the adolescent period, he/she was considered as “aware” of adolescent changes, †If even a single perceived adolescent change was admitted as abnormal by the adolescent, he/she was counted to have abnormal perception regarding the change, ‡Chi-square test was applied; df=1, CI: Confidence interval

Finding was plausible with the known fact that puberty occurs earlier in girls than in boys.

Only 23/320 (7.19%) (95% CI 4.84-10.55) adolescents were aware of any emotional/social change(s) occurring in the period of adolescence and 32/320 (10%) (95% CI 7.17-13.78) could narrate any such change taking place in them. This low percentage of adolescents narrating the emotional/social change(s) showed that these kinds of changes were not clearly visible and not commonly recognized by adolescents. Moreover, the findings also seemed to be congruent with the known wide range of diversity of such changes and lack of universal similarity of behavioral changes occurring among adolescents [Tables 2 and 3]. In comparison to the boys, more female adolescents perceived the changes as normal or physiological (P = 0.015). This finding pointed toward higher probability of myths among boys as compared to girls of this age group. Such myths were more likely about them. Significantly higher proportion (P ≤ 0.000) of female adolescents i.e., 65% (95% CI 57.34-71.96) could recognize these changes in comparison to boys i.e., 33.13% (95% CI 26.30-40.74). This reflected that females could recognize their sexual changes more easily than boys and the changes were more conspicuous in girls in comparison to boys. This
those changes, which were visible and less knowledgeable to the adolescents e.g., particularly the sexual developmental changes. All these findings clearly showed that adolescents’ self-awareness was just a fraction of the desired level.

In a community-based door-to-door survey by Nair, et al.[19] conducted through interviewing 251 unmarried girls between the ages of 10 and 19 years in village-Gazipur in East Delhi in 1998, it was found that out of those 251 girls, ~50% (i.e.,127) had attained menarche. The results showed that 45.7% of the girls who had attained menarche and 29% of pre-pubertal girls had prior knowledge about menstruation. Almost all the girls were aware of the weight and height gain that occurred with puberty; 59.7% and 33.8% of the adolescent girls were aware of the breast enlargement and growth of axillary/pubic hair respectively that accompanied puberty. Two-thirds of the study subjects had knowledge of menstruation. These findings were consistent with the findings of the current study in which 61.25% and 63.75% of the adolescent girls were aware of the physical changes and sexual changes (mainly menstruation) respectively. It was also found in the study[17] that 33.4% of the girls were aware of all the pubertal changes, which differed from the findings in the current study in which behavioral changes were known to only 3.75% girls [Table 2]. This difference could perhaps be due to reason that the authors of that study did not assess the awareness regarding behavioral changes. Similarly, in a study conducted by Ahuja and Tewari, lower levels of awareness (28%) were reported,[13] whereas in another survey conducted in Pant Nagar by the Indian Council of Medical Research Delhi (1993), awareness about menstrual changes was found to be 66.1%.[13] These variations could be due to the socio-economic, geographic, cultural or literacy status differences.

A community-based cross-sectional study by Sadhna and Achala was carried out among 1700 school going adolescent girls of 15-19 years age in Gorakhpur city in three girls’ schools during 2000-2002. Overall, 17.4% (295/1700) of the adolescent girls were not aware about facts of adolescent physical changes and menarche whereas the rest of the girls either had partial or good awareness.[18] In another study, which was conducted by Nagar and Aimol, 2010[19] in Rongram block of West Garo Hills district of Meghalaya with the objective of studying the awareness levels of menstruation and related aspects among adolescent girls, in-depth interviews were conducted with 100 adolescent school going girls in the age group of 13-18 years. Five villages from the block were selected randomly and then from secondary schools situated in those villages, the respondents were selected randomly in such a way that 20 girls from each government school were included in the study. The data were collected with the help of authors’ self-structured interview schedule. The results of the study showed that 28% of the girls did not have any knowledge/understanding of menstrual changes while the remaining 72% had some knowledge on the subject.[19]

In a quantitative survey carried out by Kotecha, et al., 2009[13] among 768 students (428 boys and 340 girls) of classes 8-12 selected from 15 Gujarati medium schools out of total of 121 schools (3 Schools from 5 Talukas) by systematic random sampling using a self-administered structured questionnaire. The results showed that 69.8% male and 52.3% female adolescents perceived physical changes whereas, 5.5% males and 66.1% females adolescents were aware of sexual changes.[13]

In real life situations, all these findings of less self-awareness among this vulnerable group of adolescents might contribute to incidental origin of new myths and their rapid spread among them.

**Conclusions**

Adolescents greatly lack correct information related to their bodies’ physiological, psychological and sexual changes. 66.3% adolescents are aware of change (s), which occur during adolescence. Awareness regarding emotional/social change(s) is very less i.e., only 7.19% among adolescents. 8.82% adolescents do not recognize these changes as normal. Female adolescents (65%) are more aware of sexual developmental changes in comparison to male adolescents (33.13%) ($P = 0.015$). Furthermore, more females, in comparison with male adolescents, have correct knowledge of the sexual changes ($P = 0.015$).

**Recommendations**

There is an urgent need for regular adolescent friendly information, education and communication activities covering different aspects of adolescent knowledge needs/problems. As a scope for future research, it is recommended that barriers to knowledge regarding adolescent changes among adolescents be identified and addressed.

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