

SAUDI INTERMEDIATE SCHOOL GIRLS' KNOWLEDGE, ATTITUDES AND PRACTICES OF PUBERTY IN TAIF, SAUDI ARABIA

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ABSTRACT

Background: Adolescence marks a period of important physical and sexual changes. It is expected that adolescents face major conflict for adapting the sudden upsurge of sexual and aggressive drives. These changes may cause unrest and confusion in the adolescents' way of perceiving the world.

Aims & Objective: The current study was conducted to assess the knowledge, attitude and practice of the intermediate school female students regarding the biological changes occurring during puberty.

Material and Methods: A sample of 542 students was selected randomly from female intermediate schools in Taif city, and their knowledge, attitude and practices regarding physical changes were assessed by using a pre-designed self-administered questionnaire. The questionnaire was constructed and validated to achieve the purpose of the study.

Results: The results showed that the median age for menarche was 13 years, 43.8% of the students in the sample scored below average level of knowledge, mothers constituted the main source of information for the students. Meanwhile, it was found that 38.9% had negative attitude towards the biological changes occurring during puberty.

Conclusion: It was concluded that the lack of knowledge was reflected on negative attitude and was translated into unhealthy practices among some students. It was recommended that the female students are in grate need for health education about the biological changes occurring during puberty, and the healthy life style to be adopted during the menstrual days.

Key-Words: Puberty; Girls; Knowledge; Attitude; Practice; Saudi Arabia

Introduction

Adolescence is the period of transition from childhood to adulthood during which many life patterns are learned and established. The World Health Organization (WHO) defined adolescence as the age group of 10-19 years.^[1] During this stage, adolescents experience a change in their physical, psychological and social aspects of life.

Puberty is a period of rapid developmental changes, where sexual and physical maturation occur. Both girls and boys experience important changes which include an increase in height and weight, accompanied by the appearance of secondary sexual characteristics, and they become capable of reproduction. It has been observed that puberty for girls starts between the age of 8-13 years, and for boys ages 9-14 years, and It may continue until the age 19 or over.^[2] Menarche means the onset of menstruation and it is usually followed by a period of adolescent sterility until menstruation begins to occur at regular intervals.^[3] Adolescents require information and guidance about what their bodily changes will be, in order to help them deal effectively with transition from childhood to adulthood and to minimize their feeling of guilt, ambiguity and confusion.

Puberty is an important phase in women's reproductive

health, and it is considered as a sensitive issue in our community that might lead the adolescent girls to get information from improper sources e.g. peers. It is assumed that better outcome of adolescent health can be achieved by increasing their awareness on puberty related issues that could pave the way for safe healthy motherhood practices. After a thorough research, the investigator could not find precedent similar studies done in Taif area.

It is proposed that the results of the current study would help in future planning for puberty education efforts in an attempt to achieve a healthy life style for adolescents. In the view of this study we aimed to promote a healthy life style for adolescent Saudi girls. Specifically we assessed the knowledge and identified the Saudi adolescents' female attitudes and practices towards the biological changes of puberty.

Materials and Methods

The study was a descriptive cross-sectional conducted in Taif city, located at 1700-2500 meters above sea level in the western region of Saudi Arabia with a population of 885,400. Education in Taif city is provided through governmental and private school systems. The female education is provided at four levels: primary; intermediate;

secondary and university levels. There are around 72 intermediate schools with a total population around 20,000 students. The target population is adolescent girls at the intermediate schools of Taif city (11-18 years) during the study period. We excluded married students or those who had a marriage experience and any student who refused to participate in the study.

The sample size of the study was calculated by using the epi info software, version 7. The following items were put into consideration: the confidence level was set at 95%; the average prevalence of different variables was set at 50% and the precision at 5% in order to get the maximum sample size. Therefore, the appropriate sample size was concluded to be 384. This number was then approximated to have a sample size of 600 female adolescents to constitute the target of the preset study.

A multistage stratified cluster random sampling technique was used to allocate the sample of the study. Taif city was divided into 3 main areas (stratum) East, West and Alhawia. In the first stage, two governmental and one private school were randomly selected from each stratum making a total of 9 schools. In the second stage, from each school, one classroom from each grade was randomly selected, and all students in each selected class who met the inclusion criteria were asked to voluntarily participate in the study.

Each student was subjected to a self-administered anonymous questionnaire. The questionnaire was constructed based on The Arab Family Health Survey.^[4] It is consisted of socio-demographic variables, knowledge on puberty (age of menarche, meaning of menstruation, duration, regularity, blood volume (depending on the number of pads), associated symptoms, premenstrual tension and secondary sexual characteristics) and attitude questions towards pubertal changes: e.g. feelings about menstruation, social reaction to menarche and feelings about mental preparation for menarche. All knowledge questions were closed-ended with yes/no or I do not know response. The answers of these questions were coded in a way to facilitate categorization of the students according to their knowledge level which is based on the overall score gained by the students. Correct answers were given 2 score. Accordingly, the maximum score for knowledge mounted to 30 scores. To rate the participant attitudes, a five point likert-type scale from "strongly agree" to "strongly disagree" was used. Scoring was reversed for positively worded items, so that a high score indicate better attitudes toward puberty. Positive attitude percentage was computed by adding together the

respondent scores dealing with their attitudes. Students were considered having positive attitudes if they score above the median value. Finally the questionnaire included questions regarding practices related to menarche such as: school absenteeism; personal hygiene; informing the family of the onset of menses; following a special diet, exercising and taking medication during menses and their source of information. The questions in this section are closed ended, some with a yes/no response and some with 4 or more responses.

The content validity of the questionnaire items was ensured based on an expert opinion of three consultants: Family physician, Epidemiologist, Obstetrics and gynecologist.

Data Analysis

The data was collected and verified by hand then coded before entry. During the survey the investigator noticed that some of the participants feel shy to answer some questions. Accepted response rate per questionnaire was 80% and above. In that way, the questionnaire was excluded if the participant did not respond to 13 questions. Missing answers to specific questions were omitted from the relevant analyses. SPSS software version 13.0 was used for data entry. Twenty percent of the questionnaires were rechecked to decrease data entry error. Descriptive statistics (e.g. number, percentage, mean, median) and analytic statistics using Chi Square test (χ^2) to compare two or more qualitative variables were applied. P-value equal or less than 0.05 was considered statistically significant.

A pilot study consisted of a sample of 30 students of intermediate school girls with similar criteria was conducted. Students were given the same self-administered questionnaire. The benefits of the pilot study were ensuring the accessibility, testing the student's understanding of questions and correcting them accordingly and knowing the average time needed to fill the questionnaire which was about 40 minutes. The results of the pilot study were not included in the main survey.

Letters of approval were obtained from research committees in Jeddah and Al-Hada military hospital before commencing the study. Verbal consent of the participants was ensured during the survey and the aim of the study was explained to them. Confidentiality was preserved and assured for all participants all the way through the different steps of the study.

Results

A total of 600 questionnaires were distributed under the supervision of the investigator. A representative sample accounting for 542 students were enrolled in the study making a response rate of 90 %.

As shown in table 1, almost half of the studied girls (47.8%) were 13 years old or less. Majority of students (81.4%) were in governmental schools. It was noted that the selected sample represented almost an equal percentage in each of studied intermediate educational grades. Most of the students (77.7%) belonged to high income families. Only 29.2% of the fathers and 20.3% of mothers of the students had university qualifications. Almost 80% of mothers were not employed.

Table 2 shows that the first the median age of getting menstruation is 13 years of age. Therefore, menarche ranged between 11 and 15 years of age. It was found that menstruation lasts for 5-7 days among 80.4% of the students. Average amount was reported by 76.4% of them. It was noted that the most common complaint was abdominal pain (57.6%) followed by headache (15.9%); 9% complain of vomiting and 8.5% have abdominal distention. The dysmenorrhea lasts for less than 4 days in almost three quarters (70.7%) of the students and its magnitude was described as moderate in half of the students (50.7%). It was noticed that 53.4% of the students suffer from mood changes and 16.5% had breast congestion during menstruation.

Table 3 describes the experience of the students about the beginning of menstruation and their practices during the menstrual days. It was found that almost three quarters of the students (73.1%) had already started menstruation. Mothers were the first to be informed about menstruation as reported by the 71.8% of the students. Moreover, it was noted that the majority of the students were informed about menstruation either right before their puberty (76.5), or shortly after they had started their menstruation (19.5%). It was evident that less than one third of the students (29.4%) were eating specific types of food stuff during the menstrual days. Meanwhile, it was observed that 39.5% of the students were continuing their performance of physical exercises during the menstrual days. A minority of the students (11.4%) and less than one quarter of them (22.5%) were not removing unwanted hair during menstrual days. It was also noted that slightly more than one quarter of students (27.2%) are absent from school during the menstrual days. Only 12.9% of the students consult physicians or pharmacists for treating

pain and 48.2% just take rest as a measure to relieve discomforts associated with their menstruation.

The Students' Knowledge about Pubertal Biological Changes

Table 4 illustrates that the knowledge level consistently increases with the increase in age of the students. The percentage of the students who achieved above average level ranged between (46.4%) in age group ≤ 13 to (67.7%) in the age group ≥ 15 years and this difference is statistically significant $p < 0.05$.

Similarly, it was noted that the level of knowledge is significantly higher among the highly educated class ($p < 0.05$) when compared to the lower level. It was also observed that the percentage of students who had above average level of knowledge was significantly ($p < 0.05$) higher among private school students (67.9%) when compared to governmental school students (53.4%). Nevertheless, it was recognized that neither, differences in the family income, nor the education level of the mother, was associated with any significant changes in the knowledge level of the students about biological changes during puberty $p > 0.05$.

As expected it was obvious that the percentage of students who had an above average level of knowledge, was significantly ($p < 0.05$) higher (65.8%) among those who experienced menstruation, as compared to those who didn't (34.4%). Generally, it was noted that the percentage of students who got an above average level of education was significantly ($p < 0.05$) higher among those who had received previous information (58.4%) when compared to those who didn't (37.2%).

Attitude of the Students towards Biological Changes of Puberty

Figure 1 illustrates the knowledge level and the attitude of the students towards the biological changes of puberty. Median of the percentage knowledge score among the current students was 60% this used as a cut-off point to assess the students' knowledge. It was noted that slightly more than half of the students (56.2%) had an above average level of knowledge (scored more than 60%), and it was noted that slightly more than one third of the students (38.9%) had a negative attitude towards biological changes occurring during puberty.

Table 5 shows that the percentage of students who had a negative attitude towards the biological changes during puberty was higher among younger students (≤ 13 years)

when compared to the older ages. However, the difference was not statistically significant ($p>0.05$). Meanwhile, the percentage of those with negative attitude was significantly ($p<0.05$) higher among grade 1 students (52.9%) as compared to the higher grades.

Table-1: Characteristics of the study group (n=542)

Characteristics	No.	%	
Age (Years)	≤ 13	259	47.8
	14	150	27.7
	≥ 15	133	24.5
	Mean ± SD	13.69 ± 1.108	
Educational Grade	1 st	191	35.2
	2 nd	192	35.4
	3 rd	159	29.3
Type of School	Governmental	441	81.4
	Private	101	18.6
Father's Education	Not educated	144	27.6
	Less than University	225	43.2
	University	152	29.2
Mother's Education	Not educated	168	31.5
	Less than University	257	48.2
	University	108	20.3

Table-2: Characteristics of menstruation among the students

Characteristic	No. (n=396)	%	
Age at Starting Menstruation (Years)	10	11	2.9
	11	24	6.3
	12	122	32.2
	13	143	26.4
	14	69	18.2
	15	10	2.6
Median	13		
Mean ±SD	12.86 ± 0.055		
Duration of Menstruation (Days)	≤ 4	35	9.4
	5-7	300	80.4
	> 7	36	9.7
Amount of Menstruation	Small	64	16.9
	Average	288	76.4
	Heavy	25	6.6
Duration of Dysmenorrhoeal (Days)	≤ 2	142	42.9
	3 - 4	92	27.8
	> 4	97	29.3
Magnitude of Dysmenorrhoeal	Mild	97	27.3
	Moderate	180	50.7
	Sever	78	22.0
Mood Changes during Menstruation	Yes	204	53.4
	No	178	46.6
Breast Congestion during Menstruation	Yes	61	16.5
	No	309	83.5

Table-3: Practices and experiences of menstruation among students

Item	No.	%	
Started Menstruation	Yes	396	73.1
	No	146	26.9
Eating Specific Diet during Menstrual Days	Yes	114	29.4
	No	274	70.6
Performing Physical Exercise during Menstrual Days	Yes	153	39.5
	No	234	60.5
Showering during Menstrual Days	Yes	342	88.6
	No	44	11.4
Hair Removal during Menstrual Days	Yes	296	77.5
	No	76	22.5
Absence from School during Menstrual Days	Yes	104	27.2
	No	279	72.8
Ways of Treating Pain during Menstruation	Physician or Pharmacist	70	12.9
	Herbal	77	14.2
	Nothing	107	19.7
	Rest	261	48.2

Table-4: Knowledge level of the students about biological changes during puberty

Characteristics	Knowledge Level		OR	CI
	Below Average (n=178)	Above Average (n=228)		
Age	≤13	105 (53.6%)	91 (46.4%)	2.42 (1.41, 4.17)
	14	42 (36.8%)	72 (63.2%)	1.22 (0.66, 2.26)
	≥15	31 (32.3%)	65 (67.7%)	1
Educational Grade	1 st	82 (59.4%)	56 (40.6%)	2.67 (1.55, 4.62)
	2 nd	56 (36.1%)	99 (63.9%)	1.03 (0.6, 1.77)
	3 rd	40 (35.4%)	73 (64.6%)	1
Type of School	Governmental	153 (46.6%)	175 (53.4%)	1.85 (1.07, 3.23)
	Private	25 (32.1%)	53 (67.9%)	1
Mother Education	Not educated	59 (48.4%)	63 (51.6%)	1.51 (0.82, 2.79)
Education Level	< University	87 (43.9%)	111 (56.1%)	1.26 (0.72, 2.22)
	≥ University	31 (38.3%)	50 (61.7%)	1
Menstrual Status	Menstruating	96 (34.2%)	185 (65.8%)	1
	Non-menstruating	82 (65.6%)	43(34.45%)	3.67 (2.30, 5.87)
Receiving Previous Information	Yes	151 (41.6%)	212 (58.4%)	1
	No	27 (62.8%)	16 (37.27%)	2.37 (1.18, 4.79)

Table-5: Attitude of the students towards biological changes during puberty

Characteristics	Level of Attitude		OR	CI
	Below Average (n=178)	Above Average (n=228)		
Age (Years)	≤ 13	82 (42.9%)	109 (57.1%)	1.31 (0.76,2.25)
	14	41 (34.2%)	79 (65.8%)	0.9 (0.49,1.65)
	≥ 15	34 (36.6%)	59 (63.4%)	1
	1 st	73 (52.9%)	65 (47.1%)	2.35 (1.3,3.9)
Educational Grade	2 nd	47 (30.3%)	108 (69.7%)	0.87 (0.5,1.52)
	3 rd	37 (33.3%)	74 (66.7%)	1
	Type of School	Governmental	135 (40.7%)	197 (59.3%)
Private		22 (30.6%)	50 (69.4%)	1
Mother's Education	Not educated	56 (45.5%)	67 (54.5%)	2.0 (1.05, 3.82)
	< University	77 (39.3%)	119 (60.7%)	1.55 (0.85, 2.83)
	University	23 (29.5%)	55 (70.5%)	1
Menstrual Status	Menstruating	100 (35.8%)	179 (64.2%)	1
	Non-menstruating	57(45.6%)	68 (54.4%)	1.50 (0.96, 2.36)
Receiving Previous Information	Yes	138 (38.0%)	225 (62.0%)	1
	No	19 (46.3%)	22 (53.7%)	1.41 (0.7, 2.82)

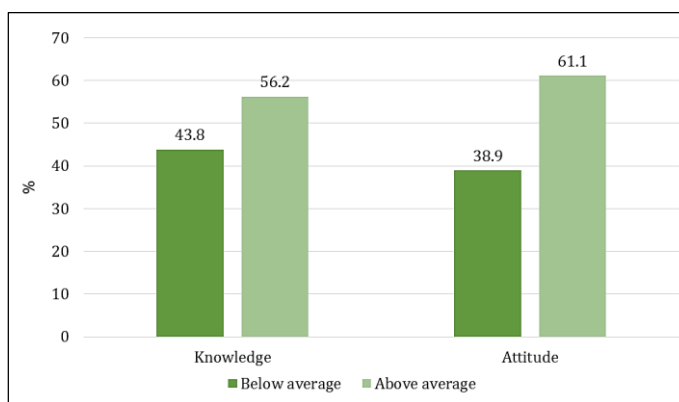


Figure-1: Knowledge and attitude of the student towards biological changes of puberty

Although the percentage of students with a positive attitude was higher among students in private schools (69.4%) when compared to those in the governmental schools (59.3%), the difference was not statistically significant ($p>0.05$). On the other hand, it was noted that

the percentage of students with a negative attitude was slightly higher among students belonging to families with a low/middle income (40.7%) as compared to those belonging to higher income families (39%), but the difference was not of statistical significance ($p>0.05$). Similarly, although the percentage of negative attitude was higher among students whose mothers were not educated (45.5%) when compared to those whose mothers were educated, the difference was not statistically significant ($p>0.05$). It was noted that the percentage of students who had an above average positive level of attitude towards biological changes occurring during puberty was higher among students who had already started menstruating (64.2%), as compared to those who had not started menstruating (54.4%). However, the difference in the findings was not statistically significant ($p>0.05$).

Discussion

The current study was conducted to assess the knowledge and attitude of intermediate school girls towards biological changes occurring during puberty, in addition to identification of their practices during menstrual days. The study showed that the median age of starting menstruation was 13 years with a mean \pm SD, 12.86 ± 0.55 ; which was higher than what was recorded among school girls in Dhahran (Saudi Arabia) where it was found that the median age of menarche for Saudi girls was 12 years.^[5]

However, it was lower than what was found in another study conducted in Saudi Arabia where it was found that the mean age of menarche was 13.24 years.^[6] It was also found to be lower than what was found in Nigeria, where the mean menarcheal age for the school girls was 13.21 ± 1.01 years.^[7] The age of starting menstruation in the school girls in the current study was very close to what was found in the study carried out in Turkey, which covered 3000 secondary schools, where it was found that the menarche age was 12.9 years^[8] and in Tunisia where the middle age of puberty was 13 years^[9]. These observed differences in the age of starting menarche among the girls in different communities could be attributed to the variety in the sociological, economic, environmental^[8] and nutritional status^[10]. Additionally, in Nigeria it was cited that menarche is believed to be influenced by many factors including altitude.^[7]

Concerning the amount of blood flow during menstruation as expressed by the students, the results revealed that 16.9% described it as small amount and 6.6% described it as heavy. Almost the same findings were exhibited among school girls in Dhahran, where it was reported that 6.9% of

the students had oligomenorrhea, 10% had hypomenorrhea and 6.2% of the girls experienced menorrhagia.^[5] On the same line, regarding the complaints during menstruation, the school girls in our study were similar to their classmates in Dhahran^[5], where spasmodic dysmenorrhea was reported among 67% of girls in Dhahran compared to collectively 66.1% of students in our study.

Although the majority of the students (89.7%) in the present study had at least one complaint during menstruation, it was noted that only 12.9% of them requested a medical consultation with a physician or pharmacist. The same finding was reported in Malaysia, where it was found that only 11.1 % of school girls obtained a medical consultation for their menstrual disorders.^[11] However, in contradiction to the present study finding, Singh et al. (1999) reported that 44.6% of Indian girls are consulting physicians when they have reproductive health problems.^[12]

In regards to the different ways of dealing with menstrual discomfort, the current study revealed that almost half of the students (48.2%) were combating menstrual discomforts by resting. The same was observed among Indian girls where it was reported that almost half of them (54%) would rest more often during menstruation than at other times.^[13]

As Expected, mothers represented the chief source of information about biological changes occurring during puberty for the students in the current study. This finding was in agreement with what was found in Oman where it was cited that females depend on the family to obtain their information about the physiological and emotional pubertal changes in their sex, particularly the mother.^[14] Also, in India, it was pointed out that 63% of the students had been informed about menarche before its onset, the major source of information was the mother (61%) and she was the first person informed about the start of menses.^[15] Similarly, in the USA, it was found that most girls had talked about menstruation with their mothers, but few had discussed it with their fathers.^[16] In Turkey it was observed that most of the students (71.4%) discussed their menstrual problems with their mothers.^[8] These observations could be explained by the school girl's perception that biological changes occurring during puberty are female affairs that should only be discussed with other females and that the mothers are the chief reference female for the girls. So it was plausible to find that mothers symbolize the chief source of information for the students. However, in the USA, it was pointed out that

girls saw mothers as critically important, but unfortunately they were often unable to meet their needs.^[16]

In regards to the knowledge level of the students about the biological changes of puberty, it was noted that slightly more than half of the students (56.2%) had an above average level of knowledge. This finding was in accordance to what was found in a national representative school-based survey conducted in Oman where it was cited that 50% of the respondents were aware of all or some of the physiological and emotional pubertal changes in their sex.^[14] Whereas in Nigeria, a similar conclusion was reported in a reverse way, when it was found that almost half of the menstrual knowledge and practices of randomly selected healthy Nigerians were deficient.^[17] These results were lower than what was revealed in a comparable study group of nursing students in Egypt, where it was found that over 85% of nursing students were acquainted with the age of menarche, the length of the menstrual cycle, the duration of the menstrual bleeding and only 72% gave a correct answer about the age of menstrual cessation.^[18]

The current study showed that the older students and those in higher grades had significantly ($p < 0.05$) better knowledge about biological changes in puberty when compared to the younger ones and those in the lower grades. These findings were in accordance with the findings of the study conducted in Riyadh city, where it was found that the age and grade were the predictors of students' knowledge among the control group and explained 7.8% of the variation of the knowledge score.^[19] This could be attributed to the cumulative knowledge gained by the students along their natural maturation process; the fact that the older students were more likely to have experienced menarche and therefore have obtained the knowledge from their chief source of information. This explanation is supported by the findings of a Nigerian study, where it was concluded that knowledge was higher in post-menarcheal girls.^[17]

On the topic of the differences in knowledge of the students about biological changes occurring during puberty in association with their socioeconomic status, it was found that neither the family income, nor the education level of the mother made any significant changes in the knowledge level of the students. These findings were different from the study done in Turkey, where it was cited that although the mother was an important source of knowledge about menarche in all socioeconomic groups, it was significantly more important in the group with high socioeconomic status.^[20] These observed differences between our findings and the Turkish study could be

attributed to the differences in the approaches followed in assigning the different socioeconomic strata.

Girls appear to have incorporated many of the prevailing cultural views of menstruation early in life. Unfortunately, most of these views are negative and non-preparative for womanhood. This is important because the experience of menarche is partly dependent on previous expectations.^[21] The current study showed that 38.9% had a negative attitude towards biological changes occurring at puberty, which was reflected on absenteeism from school during the menstrual days that was recorded among (27.2%) of the girls. Similarly, it was reported in Egypt that thirty eight percent of the students indicated that the causes of absenteeism were fear of menstrual pains and bleeding.^[18]

Conclusion

The current study showed that showering during menstrual days was significantly higher among school girls with above average level of knowledge about the biological changes occurring during puberty. This notion is supported by what was clarified by Fetohy (2007) who reported that knowledge of Saudi school girls was a predictor of the students' attitude. Meanwhile attitude was a predictor of the students' menstrual practice.^[19] However, it was found that the level of knowledge had no significant impact on eating a specific diet, performing physical exercise, hair removal, or absence from school.

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