

Knowledge, attitude and practices of adolescent females regarding reproductive health at makkah al Mukaramah

Sahar Mansour Lamadah^{1,2}, Hoda Abed El-Azim Mohamed^{1,3}, Sahar Mahmood El-Khedr^{1,4}

¹ Faculty of Nursing, Umm Al Qura University, Makkah Al- Mukarramah, KSA

² Lecturer of Obstetric and Gynecological Nursing, Faculty of Nursing, Alexandria University, Alexandria, Egypt

³ Assistant professor of Obstetric and Gynecological Nursing, Faculty of Nursing, El Minia University, El Minia, Egypt

⁴ Assistant professor of Pediatric Nursing, Faculty of Nursing, Tanta University, Tanta, Egypt
dr.saharlamadah@yahoo.com

Abstract: Reproductive health is a crucial part of general health, it is a reflection of health during adolescence and adulthood. Because the adolescent of today is the young married woman of tomorrow and the grandmother thereafter, it is important to pay attention to reproductive health needs and problems of adolescent females. This study aims to assess knowledge, attitudes and practices of adolescent females regarding reproductive health at Makkah Al Mukaramah. **Subjects and Methods:** An exploratory descriptive research design was utilized. The study was conducted at 3 departments (Nutritional department, laboratories medicine department and health administration department) at Faculty of Applied Medical Science, Umm Al Qura University and 15 governmental secondary schools representing the five educational zones at Makkah Al Mukaramah, three schools were selected from each zone. A purposive sample of 1273 students enrolled in the above mentioned settings in the range of age (15-21 years) which represent middle and late adolescents was recruited for the study. Two tools were used for data collection in the current study, a Self-Administered Questionnaire and an Attitudinal Assessment scale. **Results:** It was evident that, nearly equal percent (83.4% and 83.6%) of middle and late adolescents groups respectively had unsatisfactory knowledge toward reproductive health. In addition, (83.6% and 75.8%) of middle and late adolescences groups respectively had expressed a positive attitude toward reproductive health. Moreover, (81.7% and 83.9%) of middle and late adolescents groups respectively had unsatisfactory practices toward reproductive health. **Conclusion and recommendations:** Based on the findings of the present study, it can be concluded that both middle and late age adolescent females have poor knowledge and inadequate practices regarding different aspects of reproductive health. It was recommended to raise awareness of the public, community leaders, health personnel, adolescent girls and women about reproductive health needs of adolescents through undertaking Information /Education and Communication Programs.

[Sahar Mansour Lamadah, Hoda Abed El-Azim Mohamed, Sahar Mahmood El-Khedr. **Knowledge, attitude and practices of adolescent females regarding reproductive health at makkah al Mukaramah.** *Life Sci J* 2015;12(3):146-158]. (ISSN:1097-8135). <http://www.lifesciencesite.com>. 20

Key words: reproductive health, adolescents.

1. Introduction

Reproductive health is a crucial part of general health, it is a reflection of health during adolescence and adulthood. It is a fundamental component of an individual's overall health status and a central determinant of quality of life. ^(1,2) The WHO defines reproductive health as a state of complete physical, mental and social well-being, and not merely the absence of reproductive disease or infirmity in all matters relating to the reproductive system and to its function and processes. ^(3,4) Because the adolescent of today is the young married woman of tomorrow and the grandmother there after, it is important to pay attention to reproductive health needs and problems of adolescent females. ⁽⁵⁾ Adolescence is the transitional period between childhood and adulthood. It is a stressful developmental period filled with major changes in physical maturity, sexuality, and cognitive

processes, emotional feelings, and relationships with others. ⁽⁴⁾ The period of adolescence divided into three stages; early (10-14 years), middle (15-16 years) and late adolescence (17-21 years). ⁽⁶⁾

Adolescent females are vulnerable to a range of health risks that may affect them immediately or imposes its consequences on their future motherhood.. Inadequate nutrition during adolescence can potentially retard growth and sexual maturation. Therefore, special attention should be focused on some health related issues like nutrition and dietary practice, The rapid development in the economy that took place in Saudi Arabia during the previous decades, resulted in the adoption of a sedentary lifestyle and consumption of high fat and low-fiber diet among adolescents. ⁽⁷⁾

Results from a screening program for sickle cell disease and β -thalassemia suggested that about 90% of couples in Saudi Arabia are at risk of having affected

children still decide planning to marry.⁽⁸⁾ Premarital counseling is offered to young couples on their way to marriage in order to guide, educate and prepare them for the establishment of a healthy family. The young couples can play a vital role in the national development by bringing and raising healthy children to become productive, responsible and socially useful citizen.⁽⁹⁾

Teenage pregnancy is a public health concern both in developed and developing countries.⁽¹⁰⁾ It is known to be associated with adverse pregnancy outcomes such as preterm births, low birth weight deliveries and increased risk of caesarean delivery.^(10,11) Evidence in developing world indicates that one-third of women become mothers within 19 years of age. Relatively the situation in Saudi Arabia is severe as there are higher proportions of teenage pregnancies due to the common practice of early marriage and social expectation to have a child soon after marriage. Saudi Arabia suffers the dual burden of teenage pregnancy and older pregnancy which accounted for 9.0% and 1.6% of the total registered mothers respectively.⁽¹²⁾

Adolescent girls are especially vulnerable to reproductive tract infection because the inadequate mucosal defense mechanism and the immature lining of the cervix provide a poor barrier against infections. Also, because of the thin lining and relatively low level of vaginal acidity which increases her susceptibility to infection. Today millions of women are sufferers of RTIs and its complications and often the infection is transmitted to the offspring of the pregnant mother. Studies have identified clear links between poor menstrual hygiene and health problems such as Urinary and Reproductive Tract Infections (UTI).^(13,14) It is important that girls be taught to regard menstruation as a normal physiologic process. Every girl should be prepared for her first menstruation and what special care she should give herself during this time.^(15,16)

Significance of the study:

Reproductive health needs of adolescents as a group have been largely ignored by the existing reproductive health services. There is lack of information about the reproductive health needs and problems of adolescent females. Very little research is available on adolescent health profiles, awareness about reproductive health, psychosocial profiles and morbidity patterns. Although significant studies concerning women's sexual and reproductive needs and problems have been conducted all over the world, there is a dearth of information regarding sexual patterns and reproductive preferences among women in the Middle East in general, and particularly in Saudi Arabia⁽⁷⁾. So, this study was conducted to recognize adolescents' needs and problems through assessing

knowledge, attitude and practices of adolescent females regarding their reproductive health.

Aim of the study: This study aims to assess knowledge, attitude and practices of adolescent females regarding reproductive health at Makkah Al Mukaramah.

2. Subjects and Methods:

Research design:

An exploratory descriptive research design was utilized.

Research setting:

The study was conducted at 3 departments (Nutritional department, laboratories medicine department and health administration department) at Faculty of Applied Medical Science, Umm Al Qura University and 15 governmental secondary schools representing the five educational zones at Makkah Al Mukaramah, three schools were selected from each zone.

Research subjects:

A purposive sample of 1273 students enrolled in the above mentioned settings in the range of age (15-21 years), which represent middle and late adolescents was recruited for the study.

The sample was divided as follows:

- 766 students in the range of age (18-21 years) was involved from the above mentioned departments of the Faculty of Applied Medical Sciences, all the available students were recruited.

- 507 students in the range of age (15-17 years) was selected randomly from the secondary schools.

Multistage sampling technique was used as follows:

Stage I:

Five educational districts from makkah Al Mukaramah were selected randomly from available districts in Makkah. They were Al Nawaria, Al Omra, Al Zaher, Al Azizia, and Al Kafia.

Stage II:

From each selected district, three secondary schools were chosen by simple random sampling technique.

Stage III:

Two classes were selected randomly from each school and all students who fulfill the criteria were involved in the study.

Tools of data collection: two tools were used for data collection in the current study

First tool: The Self –Administered Questionnaire: was especially designed by the researchers and it consists of three parts as the following:

Part I: concerned socio demographic data of participants such as name, family size, age and level of education, mother's occupation.....etc.

Part II: was concerned with knowledge and practices of the subjects regarding reproductive health, such as:

- Definition, aim and elements of reproductive health.
- Nutrition and dietary practices.
- Physiology of menstruation and hygiene.
- Premarital examination and counseling.
- Early marriage and teenage pregnancy.
- Reproductive tract infections.

Part III: Sources of their information about reproductive health items.

The Scoring System:

The students answers related to knowledge were scored and calculated. According to the answers, students responses were evaluated using the model key answer sheet previously prepared by the researchers according to literatures review. A scoring for students' knowledge regarding reproductive health was consisted of given two for complete correct answers, one for incomplete correct answers, while the wrong answer was scored zero. A scoring was given to each question and a total knowledge score that ranges from zero to 26 points was adopted. Total students' score level for knowledge less than 13 (50%) were classified as poor knowledge, students who had total scores level for knowledge range from 13 - 16 (60%) were described as fair knowledge and who had complete correct answers range from 16 to 26 were described as having good knowledge.

Second tool: An attitudinal Assessment scale:

A three point Likert- like scale (agree, uncertain, disagree) was developed to assess the students' responses to attitude statements toward reproductive health. It consisted of 9 statements to which the students were asked to respond to one of the choices. A scoring for students' attitude toward reproductive health was consisted of given three for agree, two for uncertain and one for disagree. A scoring was given to each question and a total of attitude score was 27 points. A total score ranged from 21-27 conveys a positive attitude toward reproductive health, while a total score of 15-20 (75%) conveys indifferent attitude toward reproductive health and a total score of less than 14 (50%) conveys negative attitude toward reproductive health.

Reliability and Validity of the tools:

Researchers reviewed the current local and international related literature using textbooks, articles and scientific magazines. This helped the investigators to be acquainted with the problem and guided them in the process of tools designing. The tools were then prepared. Reliability of tools was tested using Cronbach's alpha test (internal consistency), its result was 0.75. To measure content validity of the tools the tool was administer to five academic nursing experts in the field to test the content validity of the tools.

Pilot Study:

To assess the clarity, feasibility and applicability of the tools used in the current study for data collection, a pilot study was conducted with 10% of the predestinated sample size, according to the stated study criteria. The results of the pilot study helped in the necessary modifications of the tools according to the content validity and results of the pilot study. The sample of the students who shared in the pilot study was excluded from the main study sample.

Administrative design:

Approval to carry out the study was obtained from responsible authorities at the previously mentioned settings after explanation of the purpose of the study.

Procedure:

The researchers hold a meeting with the female students during one of their free class time at the schools or between lectures in the departments of Faculty of Applied Medical Science to introduce themselves and briefly explained the nature and the purpose of the study. Each meeting took about 10-15 minutes. All students were informed that their participation is voluntary and reassurance was given to the students about the confidentiality of their responses. After obtaining the acceptance from the students to participate in this current study, the researchers provided to the whole class at a time an overview and clarification about the assessment tools question. Self – Administered Questionnaire and Attitudes Assessment Scale were distributed to each student and the data collectors attended the answering of the questionnaire and ensured that all information pertaining to the sheet was complete. The average time needed to fulfill the questionnaire was 20-30 minutes. Data was collected during the period from the beginning of December (2013) to the end of May (2014).

Ethical consideration:

- Obtaining the acceptance of students to participate in the study.
- All students were informed that their participation is voluntary and that the collected data will be only used for the purpose of the study, as well as for their benefits. Also, they have the right to withdraw at any time from the study.

Statistical Design:

- Data were collected, coded, tabulated and analyzed, using the SPSS version 15 computer application for statistical analysis. Descriptive statistics was used to calculate percentages and frequencies. χ^2 test was used to estimate the statistical significant differences. A significant P-value was considered when P less than 0.05 and it was considered highly significant when P value less than or equal 0.01.

Limitation of the study:

The researcher distributed the tools to 1500 female students but the response rate was 1273.

3. Results:

The results of this study are presented under heading: demographic descriptions of the female adolescent, Knowledge of adolescent regarding reproductive health, attitude toward reproductive health, health practices of adolescent and relationship between adolescents' knowledge and their family characteristics.

Demographic descriptions

As regards to **table (1)** The majority of the adolescents (96.6%) and (91%) of the middle and late age adolescents respectively were single. Fifty three point one percent (53.1%) of the middle age adolescents were first birth order compared to 57% of the late age counterpart. Nearly equal percent (14.2%) and (14.5%) of the middle and late age adolescents respectively were third birth order. Little percent (7.3%) and (6.3%) of the middle age and late age adolescents' fathers respectively were illiterate compared to 37.9% and 51.7% of them respectively who were university graduated. Five to seven family members size was reported by 46.9% of the middle age and 44.8% of the late age adolescents.

Knowledge of adolescents regarding reproductive health

Knowledge of female adolescents regarding reproductive health was illustrated in **table (2)**. It is evident that, nearly equal percent of the middle age and late adolescents (61.5%) and (60.7%) respectively had satisfactory knowledge about the definition of reproductive health. Little percent of the adolescents (0.8%) of the middle age and (3%) of the late age knew the importance of reproductive health compared to 1.6% of both groups who had satisfactory knowledge about the measures to keep reproductive health. Satisfactory knowledge about balanced diet components was reported by 71.8% and 77.2% of the middle age and late age adolescents respectively, and there was a statistical significant difference ($P=0.03^*$). Eighty three point two percent of the middle age adolescents had satisfactory knowledge about pubertal changes compared to 90% of the late age adolescents and there was statistical significant difference ($P=0.001^*$). Nearly half of the middle and late age adolescents (48.3%) and (51.8%) respectively had satisfactory knowledge about the importance of premarital Counseling. Twenty four point five percent and 27.7% of the middle and late age adolescents had satisfactory knowledge about the importance of premarital examination. Only 1.4% of the middle age adolescents know the hazards of early pregnancy compared to 4.3% of the late age adolescents, and there was statistical significant difference regarding hazards of early pregnancy ($P=0.003^*$).

Table (3) shows adolescents knowledge regarding suitable age of marriage and first pregnancy. It was

clear that, 31.4% and 26.9% of the middle age and late age adolescents determined the age from 18 to less than 21 years as a suitable age for marriage. Twenty point one percent of the middle age adolescents and 16.2% of the late age adolescents don't know the suitable age of marriage. The mean age of suitable marriage was 22.1 ± 3.0 and 22.4 ± 2.5 years of the middle and late adolescents respectively and there was statistical significance ($P=0.02^*$). As regards to suitable age of first pregnancy it was evident that 11.2% and 12.3% of the middle and late adolescents respectively mentioned less than 21 years as a suitable age of first pregnancy. Forty two percent of the middle age and 47.7% of the late age adolescents reported that the suitable age of pregnancy was 25 to less than 30 years. The mean age of suitable pregnancy was 23.7 ± 2.9 years in the middle age group and 23.5 ± 2.6

Figure (1) shows total knowledge about reproductive health. It was evident that, nearly equal percent (83.4% and 83.6%) of middle and late adolescents groups respectively had unsatisfactory knowledge toward reproductive health.

Attitude of adolescents regarding reproductive health

Table (4) illustrates the attitude of the adolescent females towards reproductive health. It reveals that (87.2%) of middle adolescence agree about the important that the food should contain meat, vegetables, fruit and dairy daily compared to (94.1%) of late adolescents, the difference was highly statistically significant ($P = 0.001^*$). Slightly less than three quarters (71.4%) of middle adolescents agree about the importance of taking a shower during menstruation is important compared to (57%) of late adolescence, the difference was highly statistically significant ($P = 0.001$). Concerning statement of " It is important that each one willing to marry seeks premarital counseling and examination" more than two third from both middle and late adolescents (70.4% and 70.5%) respectively agree about it, the difference was highly statistically significant ($P = 0.001^*$). More than two fifth of adolescent females from each group (48.9%, 42.8%) respectively were uncertain about the effect of early pregnancy on the health of mothers, the difference was statistically significant ($P = 0.04^*$). In addition, (62.9%) of middle adolescents agreed that the spacing of pregnancy is important for women's health, as compared to (69.1%) of late adolescents, the difference was highly statistically significant ($P = 0.01$). In case of any genital infection, most of middle and late adolescents (87.8%, 88.9%) respectively agreed about the importance of seeking medical help, As regarding the importance of follow-up during pregnancy, childbirth and postpartum, (88.6%) of middle adolescents agreed compared to (93.1%) of late adolescents. Moreover, 42.4% of middle adolescents

compared to 35.8% agreed that the optimal number of children in the family should be 3 or less. In addition (65.7%) of middle adolescents agreed about that the educational curriculum must include topics regarding reproductive health compared to (73.2%) of late adolescents, the difference was highly statistically significant ($P = 0.01^*$).

Total attitudes toward reproductive health between middle and late adolescents were illustrated in **figure (2)**. It was found that, (83.6% and 75.8%) of middle and late adolescences groups respectively had expressed a positive attitude toward reproductive health and (16.4% and 24.2%) respectively of them had expressed a negative attitude toward reproductive health.

Health practices of adolescents

Regarding dietary practices among adolescent females, **Table (5)** reveals that more than two third (69.8%) of middle adolescents group drink soda frequently compared to (59.8%) from late adolescents group and the difference was highly statistically significant ($p = 0.001^*$). In addition to (36.5% and 31.1%) from middle and late adolescents respectively eat 3 meals /day. Also (19.7% and 14.6%) from middle and late adolescences groups respectively perform any type of exercise and the difference was statistically significant ($P = 0.02^*$).

Table (6) reveals that the majority of middle and late adolescents group (98.4% and 98.7%) respectively have pre-menstrual/menstrual symptoms. The most common practice during premenstrual symptoms reported by middle adolescents (90.7%) is taking shower during menses as compared to (88.8%) from late adolescents. Also, more than half of adolescents in both group (58.8%, 55.9%) respectively, took hot fluids. As regards to number of changed pad/day (88.6% and 86.8%) from middle and late adolescents respectively changed 3 or more pad/day.

Figure (3) illustrated total reproductive health practices between middle and late adolescents. It was evident that, (81.7% and 83.9%) of middle and late adolescents groups respectively had unsatisfactory practices toward reproductive health.

Relationship between adolescents' knowledge and their family characteristics.

Table (7) reveals the relationship between adolescents' knowledge and their family characteristics. It is observed that father's education and mother's education of (44.5%, 39.2%) respectively of adolescent females who have unsatisfactory knowledge was high education. In addition, 70.4% mothers of adolescent females who have unsatisfactory knowledge were housewives.

Table (1): Socio-demographic characteristics of adolescent females

	Adolescence				X ² test	p-value
	Middle (n=507)		Late (n=766)			
	No.	%	No.	%		
Marital status						
Single	490	96.6	697	91.0		
Married	14	2.8	67	8.7	--	--
Divorced	3	0.6	2	0.3		
Birth order						
1	269	53.1	437	57.0		
2	121	23.9	159	20.8	2.75	0.43
3	72	14.2	111	14.5		
4+	45	8.9	59	7.7		
Fathers' education						
Illiterate/ Read/write	37	7.3	48	6.3		
Elementary/ Intermediate/ Secondary	252	49.7	302	39.4	27.21	<0.001*
University/ Postgraduate	192	37.9	396	51.7		
Do not know	26	5.1	20	2.6		
Mothers' education						
Illiterate / Read/write	55	10.8	82	10.7		
Elementary/ Intermediate/ Secondary	266	52.5	328	42.8		
University/ Postgraduate	172	33.9	347	45.3	23.99	0.001*
Do not know	14	2.8	9	1.2		
Family size						
<5	36	7.1	72	9.4		
5-7	238	46.9	343	44.8	4.06	0.26
8-11	193	38.1	305	39.8		
+ 12	40	7.9	46	6.0		

*Significant at ≤ 0.001 level.

Table (2): knowledge of adolescent females regarding reproductive health

Satisfactory knowledge	Adolescence				X ² test	p-value
	Middle (n=507)		Late (n=766)			
	No.	%	No.	%		
Definition of reproductive health	312	61.5	465	60.7	0.09	0.77
Importance of reproductive health	4	0.8	23	3.0	7.20	0.007
Measures to keep reproductive health	8	1.6	12	1.6	0.00	0.99
Balanced diet components	364	71.8	591	77.2	4.68	0.03*
Effects of malnutrition	3	0.6	7	0.9	Fisher	0.75
Pubertal changes in girls	422	83.2	692	90.3	14.09	<0.001*
Importance of premarital counseling	245	48.3	397	51.8	1.50	0.22
Importance of premarital examination	124	24.5	212	27.7	1.63	0.20
Services provided by of premarital examination	37	7.3	51	6.7	0.19	0.66
Hazards of early pregnancy	7	1.4	33	4.3	8.59	0.003*

*Significant at ≤ 0.001 level; **Significant at ≤ 0.05 level.

Table (3): Knowledge of adolescents regarding suitable age of marriage,first pregnancy and spacing.

Satisfactory knowledge	Adolescence				X ² test	p-value
	Middle (n=507)		Late (n=766)			
	No.	%	No.	%		
Suitable age for marriage						
<18	3	0.6	5	0.7		
18-	159	31.4	206	26.9		
21-	136	26.8	242	31.6	8.80	0.07
25+	107	21.1	189	24.7		
Do not know	102	20.1	124	16.2		
Mean±SD	22.1±3.0		22.4±2.5		t=5.37	0.02**
Suitable age of first pregnancy						
<21	57	11.2	94	12.3		
21-	115	22.7	165	21.5		
25-	213	42.0	365	47.7	10.18	0.04*
30+	40	7.9	33	4.3		
Do not know	82	16.2	109	14.2		
Mean±SD	23.7±2.9		23.5±2.6		0.44	0.51
Suitable pregnancy spacing (years)						
<2	35	6.9	44	5.7		
2-3	201	39.6	404	52.7	28.18	<0.001*
4+	85	16.8	133	17.4		
Do not know	186	36.7	185	24.4		
Mean±SD	3.0±1.4		2.9±1.2		0.12	0.73

*Significant at ≤ 0.001 level; **Significant at ≤ 0.05 level.

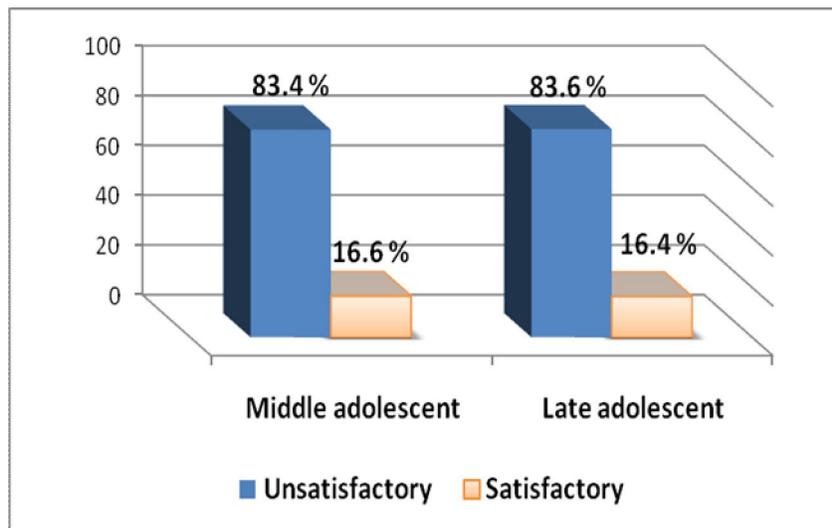


Figure (1) Total knowledge about reproductive health between (1) middle and late adolescents

Table (4): Percent distribution of adolescents' attitudes towards reproductive health

Adolescents' attitudes	Middle (n=507)			Late (n=766)			X ² test	p-value
	Dis agree	Un certain	Agree	Dis Agree	Un certain	Agree		
	%	%	%	%	%	%		
food should contain meat, vegetables, fruit and dairy	2.8	10	87.2	1.1	4.8	94.1	18.88	0.001*
Bathing during menstruation is important.	8.5	20.1	71.4	15.3	27.7	57	28.28	0.001*
It is important to seeks premarital examination before marriage.	9.9	19.7	70.4	20	9.5	70.5	42.89	0.001*
Early pregnancy affects the health of mother.	21.3	48.9	29.8	21	42.8	36.2	6.21	0.04**
Spacing of pregnancy is important for women's health.	3.7	33.4	62.9	5.2	25.7	69.1	9.31	0.01**
Genital infection, necessitate medical advice	2.4	9.8	87.8	3.1	8	88.9	1.94	0.38
Follow-up is important for reproductive health.	1.2	10.2	88.6	1.4	5.5	93.1	10.24	0.006
The optimal number of children in the family should be 3 or less.	24.9	32.7	42.4	28.8	35.4	35.8	5.91	0.52
Educational curriculum must include topics about reproductive health.	8.1	26.2	65.7	5.6	21.2	73.2	8.71	0.01**

*Significant at ≤ 0.001 level; **Significant at ≤ 0.05 level.

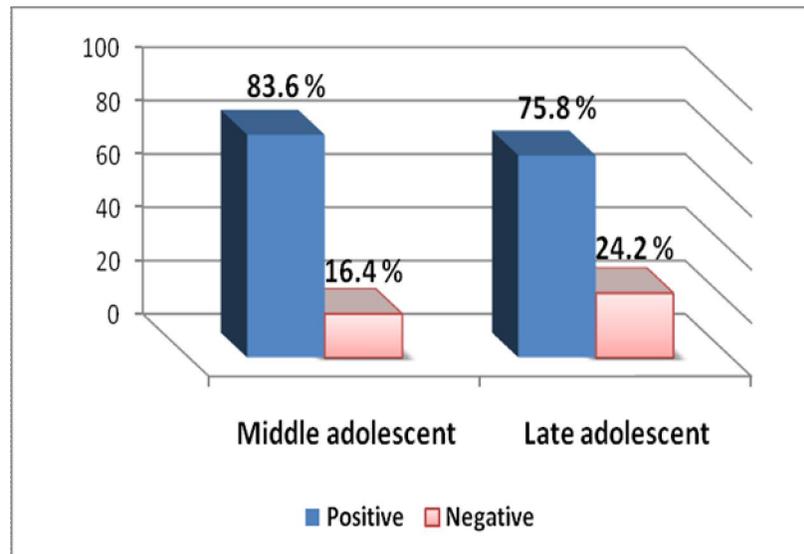


Figure. (2) Total attitude towards reproductive health between middle and late adolescents

Table (5): Dietary practices among adolescent females

Practices #	Adolescence				X ² test	p-value
	Middle (n=507)		Late (n=766)			
	No.	%	No.	%		
• Eat 3 meals/day	231	45.6	354	46.2	0.05	0.82
• Eat balanced diet	185	36.5	238	31.1	4.04	0.04**
• Eat fast food frequently	443	87.4	657	85.8	0.67	0.41
• Eat sugars frequently	238	46.9	372	48.6	0.32	0.57
• Drink soda frequently	354	69.8	458	59.8	13.29	<0.001*
• Have at least bad dietary habits	479	94.5	718	93.7	0.30	0.58
• Perform any type of exercise	100	19.7	112	14.6	5.72	0.02**

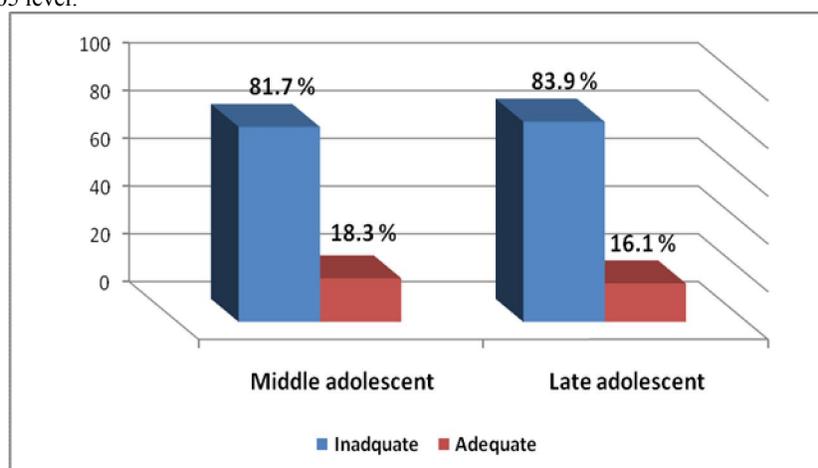
Not mutually exclusive

*Significant at ≤ 0.001 level; **Significant at ≤ 0.05 level.

Table (6): Hygienic practices during menstruation

	Adolescence				X ² test	p-value
	Middle (n=507)		Late (n=766)			
	No.	%	No.	%		
Have pre-menstrual/menstrual symptoms:						
No	8	1.6	10	1.3	0.00	0.98
Yes	499	98.4	756	98.7		
Practices during premenstrual symptoms #						
Drinking hot fluids:	298	58.8	428	55.9	1.19	0.28
Applying hot compresses:	118	23.3	217	28.3	3.93	0.04**
Taking analgesics	150	29.6	266	34.7	3.56	0.06
Taking shower during menses	460	90.7	680	88.8	1.60	0.20
No. of changed pads/day:						
1	14	2.8	15	2.0	2.48	0.29
2	44	8.7	86	11.2		
3 or more	449	88.6	665	86.8		
Change pad only when soaked with blood:						
No	259	51.1	373	48.7	0.62	0.43
Yes	248	48.9	393	51.3		

Not mutually exclusive

Significant at ≤ 0.05 level.Fig. (3) Total reproductive health practices between middle and late adolescents****Table (7): Relation between adolescents' knowledge and their family characteristics**

	Knowledge				X ² test	p-value
	Satisfactory (n=210)		Unsatisfactory (n=1063)			
	No.	%	No.	%		
Father's education:						
Illiterate and Read/write	20	9.5	65	6.1	20.69	0.002*
Elementary/ Intermediate	75	35.7	479	45.1		
Secondary						
University / Postgraduate	115	54.8	473	44.5		
Do not know	0	0.0	46	4.3		
Mother's education:						
Illiterate and Read/write	24	17.5	113	10.6	14.68	0.02*
Elementary/ Intermediate	84	40.0	510	48.0		
Secondary						
University / Postgraduate	102	48.5	417	39.2		
Do not know	0	0.0	23	2.2		
Mother's job status:						
Housewife	131	62.4	748	70.4	5.23	0.02*
Working	79	37.6	315	29.6		

4. Discussion:

Adolescence as a transition period between childhood and adulthood is a relatively new concept in developing countries, where such transition tended to be a more rapid event marked by the beginning of reproductive maturity. It is a stressful developmental period filled with major changes in physical maturity, sexuality, and cognitive processes, emotional feelings, and relationships with others. Adolescents also experience significant changes in their ability to assess and comprehend complex situations and information and in their desire to become independent, unique individuals. So, this study aims to assess knowledge, attitudes and practices of adolescent females regarding reproductive health at Makkah Al Mukaramah.

The present study revealed that, nearly half of the middle and late age adolescents were first birth order. Nearly one third of the middle age adolescents and less than half of the late age adolescents' fathers were university graduated. This result is in congruent with the **Aljohara et al., (2013)**⁽¹⁷⁾ who found that, Majority of students belonged to second or more order of birth and most of them had fathers with graduate and above level of education.

Knowledge of female adolescents regarding reproductive health revealed that, nearly two thirds of the middle age and late adolescents had satisfactory knowledge about the definition of reproductive health. Little percent of the them had satisfactory knowledge about the measures to keep reproductive health. Satisfactory knowledge about balanced diet components was reported by nearly three quarters of the middle age and late age adolescents. More than three quarters of the middle age adolescents had satisfactory knowledge about pubertal changes compared to the majority of the late age adolescents and there was statistical significant difference. Nearly half of the middle and late age adolescents had satisfactory knowledge about the importance of premarital Counseling. Nearly one fourth of the middle and late age adolescents had satisfactory knowledge about the importance of premarital examination. The results of the present study are in congruent with the study of **Simona et al (2009)**⁽¹⁸⁾ who found poor knowledge among adolescents about human reproduction system. He reported that, nearly one quarter of the adolescents had Knowledge about female reproductive system.

It was very encouraging to see that the awareness regarding minimum age of marriage and first pregnancy was very high among more than one quarter of middle age and late age adolescents determined the age from 18 to less than 21 years as a suitable age for marriage. knowledge regarding suitable age of first pregnancy revealed that, Nearly one fifth of the middle age adolescents and less than

one fifth of the late age adolescents don't know the suitable age of marriage. The mean age of suitable marriage was 22.1 ± 3.0 and 22.4 ± 2.5 years of the middle and late adolescents respectively and there was statistical significance. These results are in consistence with the study of **Fatemeh (2013)**⁽¹⁹⁾ who reported that Approximately half of adolescents (199 cases, 49.5%) believed that the best time for reproductive health is at high schools.

As regards to suitable age of first pregnancy it was evident nearly two fifth of the middle age and less than half of the late age adolescents reported that the suitable age of pregnancy was 25 to less than 30 Years. The mean age of suitable pregnancy was 23.7 ± 2.9 years in the middle age group and 23.5 ± 2.6 years in the late age group. About two fifth of the middle age adolescents and more than half of the late age adolescents regarded 2-3 years as a suitable pregnancy spacing with a mean of 3.0 ± 1.4 and 2.9 ± 1.2 years in the middle and late age adolescents respectively. The results of the current study is in agreement with the study of **Yadi KP (2006)**⁽²⁰⁾ and **Shoubha (2012)**⁽²¹⁾ who found that, 94 percent of urban and 88 percent of rural respondent were aware of the legal age of marriage. Significant difference was seen at 5% level. They reported that, early marriage leading to early motherhood is associated with serious health problems to adolescent mothers and their offspring.

Total knowledge about reproductive health between middle and late adolescents revealed that, the majority of the adolescents had unsatisfactory knowledge compared to nearly equal percent about reproductive health. The findings of the current study contradict with the study of **Farih (2014)**⁽²²⁾ who reported that half of the study sample would be having low level of knowledge, by considering differences of 15%, 20% and 30% in the risk factors associated with the low level of knowledge. Another study conducted by **Fatemeh. (2013)**⁽¹⁹⁾ reported, insufficient female youth reproductive health services (222 cases, 55.2%) and low knowledge about reproductive health (222 cases, 55.2%) was the main barriers of the female youth reproductive health aim.

Total attitudes towards reproductive health between middle and late adolescents revealed that, the majority of middle age adolescents had positive attitude regarding reproductive health compared to three quarters of the late age adolescents. This results contradict with the study of **Fetohy(2007)**⁽²³⁾ who found that the mean score of students' attitudes was low among the adolescents. Positive attitudes in the current study may be due to the development of awareness about reproductive health through mass media.

The current study showed positive attitude towards reproductive health among middle and late adolescence. Concerning statement of "It is important that each one willing to marry seeks premarital counseling and examination" more than two third from both groups agree with it, the difference was highly statistically significant ($X^2 = 42.89$ at $P = 0.001$). This positive attitude developed during adolescence will influence their lives as adults, affecting them as individuals and their future relationships as spouses and parents. This result was in agreement with **Lee et al., (2010)**⁽²⁴⁾ who found that most of students favor the premarital screening and examination program but there were concerns regarding mandating the testing and interference with individual decision making. Providing adequate care during pregnancy and childbirth is important for the health of mother and baby these findings are in line with **Tuvalu, (2007)**⁽²⁵⁾ who reported that reproductive health covers antenatal, childbirth and postnatal care, in addition to general access to health care services so gathering this information will help identify problems with the level of care provided and groups of the population whose health needs are underserved throughout pregnancy and childbirth. Moreover teenage childbearing is generally associated with higher rates of maternal morbidity and mortality, greater risks for delivery complications, low-birth weight infants and child mortality.

For many years, studies demonstrated that when mothers' space births at least 2 years apart, their children are more likely to survive and to be healthy. Infants spaced at least 2 years apart are also less likely to be premature, of low birth weight, and to be malnourished (**Rutstein (2005)**⁽²⁶⁾ and **Cleland et al. (2006)**⁽²⁷⁾). In addition recent studies also showed longer intervals are even better for infant and maternal survival and health than the two year interval earlier suggested. These results are in line with the current study which indicated that more than two third of the adolescent agree that spacing of pregnancy is important for child's health. Also a study done by (**Rutstein (2005)**⁽²⁶⁾ who investigate the relationship between pregnancy intervals and perinatal mortality and showed that the children born 3 to 5 years after a previous birth are about 2.5 times more likely to survive than children born before 2 years. Accordingly, the World Health Organization (**WHO 2006**)⁽²⁸⁾ technical consultation on birth spacing recommended a birth to conception interval of at least two years to reduce the risk of adverse maternal, perinatal and infant outcomes. Similarly **Dibaba (2010)**⁽²⁹⁾, who concluded that unintended pregnancy and short birth intervals can pose serious health risks to mothers and their infants by causing unnecessary high risk of pregnancy related complications.

Although timing and spacing of pregnancy is important for the health and survival of the newborn and the mother, unintended pregnancy and short birth interval are still among the contributing factors for the high maternal and child mortality in developing countries.

Moreover, the present study revealed that more than one third of adolescents in both groups agree that the optimal number of children in the family is 3 or less. These results are contradicted with **Carroll et al (2007)**⁽³⁰⁾ who reported that today Americans under age 35 appear to have a preference for larger families. Forty-four percent of those between the ages of 18 and 34 say that a family of three or more children is ideal, compared with 29% of those aged 35 to 54, and 33% of those 55 and older. Men and women show no difference in their views of the ideal number of children for a family. Fifty-eight percent of men and 57% of women prefer two or fewer children, while about one-third of each group prefers three or more children. This may explained by the fact of different culture and age group in the current study.

Analysis of the results of the present study indicated that more than two third of the students in both groups agree on important that the educational curriculum includes reproductive health which reflect student's needs to health education about reproductive health and help in clarify and strengthen positive values and attitudes. These results go in line with the recommendation of the World Health Organization (**WHO, 2008**)⁽³⁾ that reproductive health education be provided within the context of school programs and activities that promote health. This project has been well accepted by students, parents, and school administrators (**Tawfik, 2011**)⁽³¹⁾. Also **Kirby D, et al. (2005)**⁽³²⁾ reported that in order to young people make good decisions about reproductive health, they need good information, values and attitudes consistent with health goals, skills to behave consistently with their knowledge and values, and access to quality health services. Curriculum-based education can contribute to providing what young people need in a structured format, with flexible approaches that can be implemented in a variety of settings.

Regarding the dietary practices among adolescent females analysis of the results of the current study revealed that less than three quarters of the middle adolescences group drink soda frequently compared to two thirds of late adolescence group. In addition most of the adolescent in both groups eat fast food frequently and near half of them eat sugars frequently. This is anticipated because fast foods are popular choices because they are inexpensive, familiar, and available at almost any hour of the day or night and because many adolescents socialize with their peers at fast food establishments. While **Nielsen**

et al. (2002)⁽³³⁾ mentioned that the most popular food items consumed by adolescents at fast food establishments include French fries, sandwiches (especially hamburgers and cheeseburgers), pizza, and Mexican dishes (tacos and burritos). The most common beverage choices are carbonated soft drinks, coffee/tea, and milk (in that order). On the other side **Slining et al. (2013)**⁽³⁴⁾, reported that Seven food sources, including sugar-sweetened beverages, pizza, full-fat milk, grain-based desserts, breads, pasta dishes, and savory snacks, consistently contributed to this trend. The recent changes included significant decreases in sugar-sweetened beverages, pizza, pasta dishes, bread, and savory snacks; and significant increases in fruit. In addition most adolescents snack **Adair, Popkin (2005)**⁽³⁵⁾, After approximately 12 years of age, teenagers seldom conform to a regular pattern of three meals per day; more than one-half of teens admit to eating at least five times per day **Stockman et al 2005)**⁽³⁶⁾ this consistence with the current study which indicated to more than one third adolescences from both groups eat 3 meals /day. Moreover the **WHO (2004)**⁽³⁷⁾ Global Strategy for Diet and Physical Activity recommendations call for achieving an energy balance, limiting the energy intake from fats, reducing the intake of free sugars and increasing fruit and vegetable consumption.

Bad dietary habits skipping breakfast is another unhealthy dietary habit and was found to be very common in the present study. This go in line with the study done by **Mahfouz et al (2008)**⁽³⁸⁾ who stated that the breakfast skipping represent 49% among Saudi adolescents from Abha, about 15% among Saudi secondary school students from Jeddah, and about 10% among adolescent males and nearly 19% among females in the United Arab Emirates (**Bin Zaal et al 2009)**⁽³⁹⁾. Skipping breakfast was also shown to be prevalent in the United States and Europe, ranging from 10% to 30%, depending on age-group, population and definition (**Rampersaud et al 2005)**⁽⁴⁰⁾. Concerning to exercise, less than one quarter's of both groups perform any type of exercise.

Practice of healthier behavior like menstrual hygiene and self-care practices during normal menstruation, menorrhoea and dysmenorrhoea are important indicators of health especially during the reproductive age of a woman, the current study showed that the most common practice during premenstrual symptoms reported by both groups is taking shower during menses, more than half of them drinking hot fluids. As regards number of changed pad/day more than three quarters from middle and late adolescences groups changed 3 or more pad/day, and around half of them change pad only when soaked with blood. **Karakoc (2014)**⁽⁴¹⁾, reported that the rate of using hygienic pads was determined as 87.7% and

it was 96.7% in **Turan and Ceylan (2007)**⁽⁴²⁾ study. While results of the study done by **Adika, et al (2013)**⁽⁴³⁾, reveal that self-care practice during menstruation includes: regular washing of under wears (88.5%), regular changing of under wear (77.0%), shaving the genital area (65.1%), regular bath (60.8%), use of sanitary pads (53.6%). A similar finding was observed by **Singh and Maya (2006)**⁽⁴⁴⁾ in their study on knowledge assessment regarding puberty and menstruation among adolescent school girls in Varanasi district, India. Again, **Adika et al. (2011)**⁽⁴⁵⁾ observed a poor perception and behavior towards the use of sanitary pads during menstruation among adolescent school going girls they noted that lack of finance was responsible for non-usage of sanitary pads and hence the use of ether absorbent such as clothes. Regardless of these findings, many of the studied females did not have appropriate knowledge about the menstrual period hygiene, and did not practice health-oriented behavior in this regard; therefore, reduce misinformation, increase accurate knowledge and promoting positive attitudes towards management of menstruation and related problems among the adolescent girls is the need of the hour.

Moreover results of the study done by (**Ray and Dasgupta, 2012)**⁽⁴⁶⁾, reveals that self-care practice during menstruation includes: regular washing of under wears (88.5%), regular changing of under wear (77.0%), shaving the genital area (65.1%), regular bath (60.8%), use of sanitary pads (53.6%), use of deodorant (45.9%) and relaxation at home (30.1%) but however, this indicate a sub-optimal level of care during menstruation. (**Singh et al., 2011)**⁽⁴⁷⁾, recommended that as adoption of high quality menstrual hygiene will play an important role in prevention of reproductive tract infections.

From the results of the present study, it can be concluded that adolescent girls do not have enough or necessary information about different aspects of reproductive health to help them go through adolescence successfully and prepare them for future reproductive roles. This kind of information should come from parents. As shown in table (7), there is a significant relationship between the educational background of parents and the adolescent's total score of knowledge about reproductive health. It seems that there is little dialogue between parents and their daughters on these issues. It may be due to Saudi Arabia is considered as a conservative country. This can be understood if we take into consideration the religious and cultural beliefs in KSA. There is a widespread view that discussion of this issue with adolescents will provoke pre-marital activities. (**Farih M et al 2014)**⁽⁴⁸⁾. These results are contradicted with the results of a study carried out by **Al Quaiz et al (2013)**⁽⁴⁹⁾ who found that Father's education of 81.2%

and mother's education of 63.2% of students respectively who have appropriate sexual health knowledge were graduate or post graduate.

Conclusion:

Based on the findings of the present study, it can be concluded that both middle and late age adolescent females have poor knowledge and inadequate practices regarding different aspects of reproductive health. Positive attitudes of adolescent females were found toward reproductive health. There is a statistical significant differences between parent's education, women's occupation and adolescents' knowledge toward reproductive health.

Recommendations:

1. Undertaking Information /Education and Communication programs to raise awareness of the public, community leaders, health personnel, adolescent girls and women about reproductive health needs of adolescents.

2. Develop school curricula that give students age- appropriate information about reproductive health and train and support teachers so that they can teach about reproductive health accurately.

3. Further study is needed to assess whether the existing health care systems respond to identified adolescents' reproductive health needs and to which extent.

Acknowledgements:

The authors would like to thank Institute of Scientific Research and Revival of Islamic Heritage at Umm Al-Qura University (project No 43309042) for the financial support.

References:

1. UNDP/UNFPA/WHO/World Bank. Social science methods for research on reproductive health topics. Geneva, Switzerland, UNDP/UNFPA/WHO/World Bank Special Programme on Research, Development, and Training in Human Reproduction, 2006. Available at whqlibdoc.who.int/hq/1999/WHO_RHR_HRP_SOC_99_1.pdf -accessed 22 June 2010.
2. United Nations Population Information Network (POPIN). Guidelines on reproductive health. Geneva, Switzerland, United Nations Population Information Network (POPIN), 2002. Available at www.un.org/popin/unfpa/taskforce/guide/iatfrepgh.gdl.html - accessed 22 June 2010.
3. WHO. The Reproductive Health Library (RHL), Geneva, Switzerland, World Health Organization, 2008. Available at apps.who.int/rhl/en/index.html - accessed 22 June 2010.
4. Hall, Kelli Stidham, Caroline Moreau, and James Trussell. "Determinants Of And Disparities In Reproductive Health Service Use Among Adolescent And Young Adult Women In The United States, 2002-2008." *American Journal Of Public Health* 102.2 (2012): 359-367. Academic Search Premier. Web. 7 Nov. 2012.
5. Child and adolescent health and development, WHO report, 18 July 2013, www.searo.who.int/entity/child_adolescent/en.
6. Esere O.,M., (2008): Effect of sex education programme on at-risk sexual behaviour of school-going adolescents in Ilorin, Nigeria, *African Health Sci.* Jun 2008; 8(2): 120–125.
7. Alkoly T. Abd Allah A. Alghamid A. Nutritional Status and Eating Behaviors among Adolescents of Some Intermediate Schools in Jeddah. *JKAU: Med. Sci.* 2011; 18(2). DOI: 10.4197/Med. 18-2.X.
8. Azam M. and Saeideh M. (2013): Women's perceived internal control of future pregnancy outcomes and its related factors, *Iran J. Nurs Midwifery Res.* 2013 Mar-Apr; 18(2): 158–162.
9. Gharaibeh H, Mater FK. (2009): Young Syrian adults' knowledge, perceptions and attitudes to premarital testing. *IntNurs Rev.* 2009. Dec; 56(4):450-455.
10. Rajae M, Amirzadeh S, Mirblook F, Soltani MA. (2010): The effect of maternal age on pregnancy outcome. *Asian J Med sci* 2010; 2(3): 159-162.
11. Magill M, Wilcox R. (2007): Adolescent pregnancy and associated risks: not just a result of maternal age. *Am Fam Physician* 2007; 75(9): 1310-1311.
12. El-Gilany A, Hammad S. (2009): Teenage pregnancy: proportion and outcome in Al-Hassa, Saudi Arabia. *Paediatrics.me* 2009; 14(2): 42-46.
13. Ahmed, R. & Yesmin, K. (2008). Menstrual Hygiene: Breaking the Silence. [Online], Available: http://www.wateraid.org/.../ch21_menstrual_hygiene_breaking_the_silence.
14. Omidvar, S. & Begum, K. (2010). Factors Influencing Hygienic Practices during Menses Amongst Girls from South India. A Cross Sectional Study. *International Journal of Collaborative Research on Internal Medicine & Public Health.* 2 (12): 411-423. [Online], Available: <http://www.iomcworld.com/ijcrimph/files/v02-n12-01.pdf>.
15. Sommer, M. and Ackatia-Armah, T. 2012. The gendered nature of schooling in Ghana: Hurdles to girls' menstrual management in school. *JENdA*, Vol.20, pp. 63-79.
16. McMahon, S. et al. 2011. The girl with her period is the one to hang her head: Reflections on menstrual management among schoolgirls in rural Kenya. *BMC International Health and Human Rights*, Vol. 11(7), pp. 1–10.
17. AlJohara M AlQuaiz, Ambreen Kazil and Maha Al Muneef, Determinants of sexual health knowledge in adolescent girls in schools of Riyadh-Saudi Arabia: a cross sectional study AlQuaiz et al. *BMC Women's Health* 2013, 13:19 <http://www.biomedcentral.com/1472-6874/13/19>
18. Simona R. & John K. K., Knowledge, Attitude and Practices Study on Reproductive Health Among Secondary School Students in Bolgatanga, Upper East Region, Ghana *African Journal of Reproductive Health* (2009):Vol 13 No 4 December.
19. Fatemeh Bazarganipour, Seyed Abdolvahab Taghavi, Fatemeh Hekmat zadeh, Malihe Sarviye, & Nazafarin Hosseini, Evaluation of Female Youth Educational Needs about Reproductive Health in Non-Medical Students in the City of Qom *Journal of Family and Reproductive Health jfrh.tums.ac.ir* (2013) Vol. 7, No. 2, June.

20. Yadav KP, Child Marriage in India. New Delhi: Adhyayan, 2006.
21. ShubhaDube and Kirti Sharma, Knowledge, Attitude and Practice Regarding Reproductive Health among Urban and Rural Girls: A Comparative Study Department of Human Development, University of Rajasthan, Ethno Med, (2012), 6(2): 85-94.
22. Farih M., Khalid Khan, Della Freeth and Catherine Meads, Sexual and reproductive health knowledge, information-seeking behaviour and attitudes among Saudi women: a questionnaire survey of university students, (2014), 11:34. <http://www.reproductive-health-journal.com/content/11/1/34>.
23. Fetohy E., Impact of a Health Education Program for Secondary School Saudi Girls About Menstruation at Riyadh City, Health Administration & Behavioral Sciences Dep., High Institute of Public Health, Alexandria University, Egypt. J Egypt Public Health Assoc (2007) Vol. 82 No. 1 & 2.
24. Lee RL, Loke AY, Wu CS, Ho AP. (2010): The lifestyle behaviours and psychosocial well-being of primary school students in Hong Kong. J Clin Nurs. 2010;19:1462-72.
25. Tuvalu (2007): Reproductive health, Demographic and Health Survey Facts and figures available at www.spc.int/sdd/index.../216-4-reproductive-health.
26. Rutstein S. (2005): Effects of preceding birth intervals on neonatal, infant and under-five years mortality in developing countries: evidence from the demographic and health surveys. International Journal of Gynecology and Obstetrics. 2005;89:S7-S24.
27. Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. (2006): Family Planning: The Unfinished Agenda. Lancet. 2006 Oct;47-64.
28. WHO (2006): author. Report of a WHO Technical Consultation on birth spacing. Geneva: Switzerland; 2005. Jun 13-15.
29. Dibaba y. (2010): Child Spacing and Fertility Planning Behavior Among Women in Mana District, Jimma Zone, South West Ethiopia, Ethiop J Health Sci. Jul 2010; 20(2): 83-90.
30. Carroll J., (2007): Americans: 2.5 Children Is "Ideal" Family Size, AMERICAS June 26.
31. Tawfik M., (2011): "Reproductive Health among Secondary Schools Girls," paper presented at the National Conference on Youth and Adolescents' Health, Egyptian Family Health Society, Cairo, 2011.
32. Kirby D, Laris BA, Roller L. (2005): Impact of Sex and HIV Education Programs on Sexual Behaviors of Youth in Developing and Developed Countries. Research Triangle Park, NC: Family Health International, 2005.
33. Nielsen SJ, Siega-Riz AM, Popkin BM. (2002): Trends in food locations and sources among adolescents and young adults. Prev Med 2002; 35:107.
34. Slining MM, Mathias KC, Popkin BM. (2013): Trends in food and beverage sources among US children and adolescents: J Acad. Nutr. Diet 2013; 113:1683.
35. Adair LS, Popkin BM. (2005): Are child eating patterns being transformed globally? Obes Res 2005; 13:1281.
36. Stockman NK, Schenkel TC, Brown JN, Duncan AM. (2005): Comparison of energy and nutrient intakes among meals and snacks of adolescent males. Prev Med 2005; 41:203.
37. World Health Organization (WHO, 2004): *Global Strategy on Diet, Physical Activity and Health*. WHA57.17. Geneva, Switzerland: WHO; 2004.
38. Mahfouz AA, Abdelmoneim I, Khan MY, Daffalla AA, Diab MM, Al-Gelban KS, Moussa H (2008): Obesity and related behaviors among adolescent school boys in Abha City, Southwestern Saudi Arabia. J Trop Pediatr 2008, 54:120-124.
39. Bin Zaal AA, Musaiger AO, D'Souza R (2009): Dietary habits associated with obesity among adolescents in Dubai, United Arab Emirates. Nutr Hosp 2009, 24(4):437-444.
40. Rampersaud GC, Pereira MA, Girard BL, Adams J, Metz JD (2005): Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. J Am Diet Assoc 2005, 105:743-760.
41. Karakoc, Bingol, and Ocakci (2014): Menarche and First Emotional Reactions of Turkish Adolescent, Ankara Sağlık Hizmetleri Dergisi, Cilt 13, Sayı 1, 2014.
42. Turan, T., Ceylan, S. S. (2007): Determination of 11-14 year old primary student's practices and knowledge about menstruation. FSHD-Journal of First Health Services, 2(6), 41-54.
43. Adika, V., Ayinde M. and Jack-Ide I.(2013): Self-care practices of menstrual hygiene among adolescents school going girls in Amassoma Community, Bayelsa State, international journal of nursing and midwifery, Vol. 5(5), pp. 99-105, August 2013.
44. Singh SP, Singh M, Arora M, Sen P (2006): Knowledge Assessment regarding Puberty and Menstruation among School Adolescent Girls of District Varanasi, (U.P.). Indian J. Prev. Soc. Med. 37(1,2): 9-1.
45. Adika VO, Yagba J, Apiyanteide AF, Ologidi PW, Ekpo KE (2011): Perception and behavior on use of sanitary pads during menstruation among adolescent school girls in Bayelsa State, Nigeria. Adv. Appl. Sci. Res. 2(6):9-15.
46. Ray S, Dasgupta A (2012): Determinants of Menstrual Hygiene among Adolescent Girls: A multivariate analysis. Natl. J. Community. Med. 3(2):294-301.
47. Singh S, Kandpal SD, Roy D (2011): Menstrual Hygiene Practices and RTI among ever-married women in rural slum. Indian J. Community. Health 22:2, 23:1
48. Farih M, Khan K, Freeth D, Meads C. Protocol study: sexual and reproductive health knowledge, information-seeking behaviour and attitudes among Saudi women: a questionnaire survey of university students. Reproductive health 2014; doi:10.1186/1742-4755-11-34.
49. Alquaiz M, Kazi A, Al muneef M. Determinants of sexual health knowledge in adolescent girls in schools of Riyadh-Saudi Arabia: a cross sectional study. BMC Women's Health 2013.