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### RESEARCH ARTICLE

#### KNOWLEDGE OF MOTHERS ABOUT PUBERTY SIGNS AMONG CHILDREN

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#### Abstract

**Background:** Adolescence is one of the most exciting and convoluted periods in the life span of mankind which is bridging childhood and adulthood. There are rapid physical, cognitive, social, and emotional changes during this period. The most dramatic changes related to adolescence are the physical changes that occur as a part of pubertal process. Mothers need proper and adequate knowledge about physical and emotional changes of teenagers to recognize any deviations from reproductive health and also to overcome the shyness that might be related to sexual and reproductive health. The aim of this study is to investigate the knowledge of mothers regarding puberty signs among children in Saudi Arabia, critique relationship between mothers and their children, and to explain the puberty signs for mothers

**Methods:** We conducted a cross sectional study in different regions in KSA during the period from 1 January to 31 June 2020. An online questionnaire was used to collect data from Saudi mothers to measure their knowledge about puberty signs in their children. Pre-testing of the questionnaire on 10 respondents, after which necessary changes were made, and the questionnaire was re-administered. Data was compiled and analyzed using statistical package for the social sciences (SPSS, version 16) and results were analyzed with frequencies and Chi-squared test as appropriate. P value was considered significant if <0.05.

**Results:** The study included 1669 participants; nearly half of them (49.9%) were 26-40 years. More than half of participants 68.1% had one or all of their children reached puberty, 74.3% noticed changes in the body of son / daughter during puberty and 72.9% of parents tried talking to their son / daughter about puberty. 74.7% of subjects reported 12 – 16 years as a normal age for puberty in boys but, in girls 82.7% reported 9-14 years as a normal age for puberty. The majority 89% of participants think that proper nutrition plays a role in this stage also, 84.7% said that obesity and hereditary factors play a role in delaying or advancing adulthood, 63.4% reported 15 years as age of delay in puberty in girls but, in boys nearly same percentage reported age of 20-year-old. 72.7% know the difference between primary and secondary

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puberty signs in girls and boys, two third of cases (60.8%) think that menstrual cycle is organized for girls from 15-16 years and 70.5% know what are safe painkillers in the menstrual period. The majority 83.7% reported breast enlargement as a first signs of puberty followed by appearance of pubic/axillary hair 62.4%, menstrual cycle 53.1% and 26.4% for increase in length. In boys, 87.2% of cases reported change in voice as a first signs of puberty, 65.4% appearance of pubic/axillary hair, 39.3% length increase and 34.8% for body change. Significant relations were found with thinking obesity and hereditary as factors play a role in delaying or advancing adulthood and who think the menstrual cycle disorder in the early years of puberty indicate a defect in the girl's body ( $p < 0.05$ ).

**Conclusion:** Medical awareness campaigns and conferences for mothers to increase their knowledge of the signs of puberty among their children should be carried out in Saudi Arabia.

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### **Introduction:-**

Adolescence is one of the most exciting and convoluted periods in the life span of mankind which is bridging childhood and adulthood [1]. There are rapid physical, cognitive, social, and emotional changes during this period. The most dramatic changes related to adolescence are the physical changes that occur as a part of pubertal process [2].

Because of the importance of the role of parents in teenage education about puberty sanitation, it is very important for mothers to learn about puberty and its health issues. Regional, cultural, and geographical variations on people's knowledge are important [3]. Without adequate guidance, transition from this stage of life can create numerous challenges for adolescents, families, and communities [4]. Family as the first social unit has the most important role to play in informing and shaping adolescent knowledge and health behaviors. While each member of the family is involved in the education of adolescent puberty problems, the mother's role is more important than others and more adolescents learn their health habits from their mothers [5].

Mood changes and energy level variations are normal parts of puberty, as are swings between feeling independent and wanting parental support. Social and emotional changes show child is forming their own identity and learning how to be an independent adult. They are developing their decision-making skills and learning to recognize and understand the consequences of their actions [6].

Mothers need proper and adequate knowledge about physical and emotional changes of teenagers to recognize any deviations from reproductive health and also to overcome the shyness that might be related to sexual and reproductive health [7].

Previous studies reported that parents are the main sources of information about reproductive health for their children. According to the findings of Nwagwu's study in Nigeria, the sources of information about reproductive health for adolescent girls are parents (56.1%), friends (53.18%), books (45.56%), teachers (44.15%), internet (45.19%), and health centers (54.14%) [8]. Kumar et al. showed that mothers were the main source of information for 75% of girls, and sisters were the source of information for 8.64% of girls [9]. The findings of Kamalikhah et al. revealed that the majority of students believed that the best training providers are health educators because of their convenient communication with the students. Some students said that mothers do not teach kids because they think it makes children impudent, others expressed embarrassment of discussing it with their mothers, and some students believed that their families should not be involved in their sexual education [10].

### **Objective:-**

The present study investigates the knowledge of mothers regarding puberty signs among children in Saudi Arabia, critique relationship between mothers and their children, and to explain the puberty signs for mothers

### Methodology:-

This is a cross sectional study conducted in different regions of Saudi Arabia during the period of 1 April to 30 July 2020. Data was collected by using a pre-designed online questionnaire until the sample size was covered by using a self-administered questionnaire containing a brief introduction explaining the idea of the research to all participants. Sociodemographic and clinical data was obtained from participants after consent by filling out the questionnaire.

A structured questionnaire designed to assess knowledge of mothers about puberty signs among their children was used.

Pilot study was conducted to validate the questionnaire by pre-testing of the questionnaire on 20 respondents, after which necessary changes were made, and the questionnaire was re-administered.

We calculated our sample size using standard online tools through the following formula ( $N=(Z\alpha)^2 \times ([p(1-p)]/d^2)$ )

Where:

n = estimated sample size.

Z $\alpha$  at 5% level of significance = 1.96

d = level of precision and is estimated to be 0.05

p = High awareness levels in two previous studies (30%).

Actual sample size = (Primary sample size  $\times$  design effect (estimated to be 1.5))

The expected response rate is estimated to be 80%.

Descriptive statistics by simple table were presented as frequency and percent of categorical data. Chi square test was used to test the relation between (age, occupation, marital status, educational level).

### Ethical Considerations:

An ethical consideration was obtained from King Fahad Medical City. Questionnaire introduction explained the purpose and procedure of the study to all participants. Participants were informed of their freedom to decline participation if they chose to and or join study and withdraw at any point.

### Results:-

Table (1): show sociodemographic characters of the studied population, the study included 1669 participants; nearly half of them (49.9%) were 26-40 years followed by 30.5% were 41-50 years. As regards educational level; the majority 70.2% complete university education and 24.8% secondary. More than half 58.3% does not working.

Table (2): show knowledge of participants about puberty stage; 21.6% of participants had 3 children and 19.8% had 4. More than half of participants 68.1% had one or all of their children reached puberty, 74.3% noticed changes in the body of son / daughter during puberty and 72.9% of parents tried talking to their son / daughter about puberty. The majority 82.7% of mothers doesn't suffer from shame when asking their daughter about the signs of puberty, 64.5% noticed shy children when talking to them about signs of puberty and 93.2% prefer to tell their son or daughter about puberty. More than half 56.4% of mothers encounter difficulty in dealing with a child during adolescence and the most common difficulties reported were mood changes by 53.2%.

As regard age of puberty, our study found that 74.7% of subjects reported 12 – 16 years as a normal age for puberty in boys but, in girls 82.7% reported 9-14 years as a normal age for puberty. The majority 89% of participants think that proper nutrition plays a role in this stage also, 84.7% said that obesity and hereditary factors play a role in delaying or advancing adulthood, 63.4% reported 15 years as age of delay in puberty in girls but, in boys nearly same percentage reported age of 20-year-old. 72.7% know the difference between primary and secondary puberty signs in girls and boys, two third of cases (60.8%) think that menstrual cycle is organized for girls from 15-16 years and 70.5% know what are safe painkillers in the menstrual period. 88.7% of subjects think that it is the duty of the father to communicate with the son to talk about puberty and its signs, 96% report mother to communicate with the daughter to talk about puberty and its signs and the majority don't think it is right for girls or boys to ask each other about signs of puberty instead of their parents also, the majority don't warn their daughter or son not to talk to her teachers or her friends about puberty and its signs.

In case of mood and psychological changes, the majority 77.7% could deal by respecting them and direct them to useful interests followed by ignoring the psychological factor and help them sometimes. 81.9% think that doctor should be consulted when one of the signs of puberty in children is late and the majority doesn't find it difficult to talk to a doctor about this topic.

As regard signs of puberty, in girls the majority 83.7% reported breast enlargement as a first signs of puberty followed by appearance of pubic/axillary hair 62.4%, menstrual cycle 53.1% and 26.4% for increase in length. In boys, 87.2% of cases reported change in voice as a first signs of puberty, 65.4% appearance of pubic/axillary hair, 39.3% length increase and 34.8% for body change.

Regarding to the symptoms a mother should notice on their daughter during puberty, 58.5% reported increase in the days of the session, 58.1% regularity of the cycle and 46% note that the daily activity of the teenager affects by this stage.

Table (3): show relations between educational level and knowledge about puberty, we found that there was no significant relation with different knowledge aspects like the difference between primary and secondary puberty signs in girls and boys, the duty of the father or mother to communicate with the son or daughter to talk about puberty and its signs, how do you deal with mood and psychological changes in puberty and consulting doctor when one of the signs of puberty in children is late ( $p>0.05$ ). Significant relations were found with thinking obesity and hereditary as factors play a role in delaying or advancing adulthood and who think the menstrual cycle disorder in the early years of puberty indicate a defect in the girl's body ( $p<0.05$ ).

**Table 1:-** Sociodemographic characters of studied population (N=1669).

Age:	Frequency	Percent
25 or less	214	12.8
26 – 40	833	49.9
41 – 50	509	30.5
51 or more	113	6.8
<b>Educational level:</b>		
primary	29	1.7
Intermediate	54	3.2
Secondary	414	24.8
University or higher	1172	70.2
<b>work status:</b>		
Work	696	41.7
NoWork	973	58.3

(N=1669)	Frequency	Percent
<b>How many children do you have</b>		
0	137	8.2
1	185	11.1
2	290	17.4
3	360	21.6
4	330	19.8
5	196	11.7
6	96	5.8
7	43	2.6
8	20	1.2
9	4	.2
10	5	.3
11	3	.2
<b>Has one or all of your children reached puberty</b>		
Yes	1137	68.1
No	532	31.9
<b>Have you noticed any changes in the body of your son / daughter during puberty</b>		
Yes	1240	74.3
No	429	25.7
<b>Have you tried talking to your son / daughter about puberty</b>		
Yes	1216	72.9
No	453	27.1
<b>Do you suffer from shame when asking your daughter about the signs of puberty</b>		
Yes	289	17.3
No	1380	82.7
<b>Have you ever noticed shy children when talking to them about signs of puberty</b>		
Yes	1076	64.5
No	593	35.5
<b>Do you prefer to tell your son or daughter about puberty, or will others tell them</b>		
you	1555	93.2
others	114	6.8
<b>What is the normal age for puberty in boys</b>		
9 - 14	221	13.2
12 - 16	1247	74.7
16 -18	141	8.4
I do not know	60	3.6
<b>What is the normal age of puberty for girls</b>		
9 - 14	1380	82.7
12 - 16	265	15.9
16 -18	16	1.0
I do not know	8	.5
<b>Did you encounter any difficulty in dealing with a child during adolescence</b>		
Yes	942	56.4
No	727	43.6
<b>What are the most difficulties you faced when reaching your children</b>		
Behavior control	486	29.1
Mood changes	888	53.2
Frequent requirements	106	6.4

<b>From your point of view, does proper nutrition play a role in this stage</b>		
Yes	1486	89.0
No	183	11.0
<b>Do obesity and hereditary factors play a role in delaying or advancing adulthood</b>		
Yes	1414	84.7
No	255	15.3
<b>At what age is considered a delay in puberty in girls</b>		
10 years	57	3.4
15 years	1058	63.4
20 years	554	33.2
<b>At what age is there a delay in puberty for boys</b>		
10 years	17	1.0
15 years	590	35.4
20 years	1062	63.6
<b>Do you know the difference between primary and secondary puberty signs in girls and boys</b>		
Yes	1213	72.7
No	456	27.3
<b>Does the menstrual cycle disorder in the early years of puberty indicate a defect in the girl's body</b>		
Yes	366	21.9
No	968	58.0
Don't no	335	20.1
<b>Do you know what are safe painkillers in the menstrual period</b>		
Yes	1177	70.5
No	232	13.9
Don't no	260	15.6
<b>When the menstrual cycle is organized for girls</b>		
onset of puberty	131	7.8
15- 16 years	1014	60.8
other	524	31.4
<b>Do you think it is right for girls to ask each other about signs of puberty instead of their parents</b>		
Yes	449	26.9
No	1220	73.1
<b>Do you think it is right for boys to ask each other about signs of puberty instead of their parents</b>		
Yes	387	23.2
No	1282	76.8
<b>Do you think it is the duty of the father or mother to communicate with the son to talk about puberty and its signs</b>		
Father	1481	88.7
Mother	188	11.3
<b>Do you think that it is the duty of the father or mother to communicate with the daughter to talk about puberty and its signs</b>		
Father	66	4.0
Mother	1603	96.0
<b>Do you warn your daughter not to talk to her teachers or her friends about puberty and its signs</b>		
Yes	581	34.8
No	1088	65.2
<b>Do you warn your son not to talk to his teachers or friends about puberty and its signs</b>		
Yes	631	37.8
No	1038	62.2

<b>How do you deal with mood and psychological changes in puberty</b>		
Direct their attention to useful stuff	1297	77.7
Ignore the psychological factor	52	3.1
Help them often	320	19.2
<b>In your opinion, should a doctor be consulted when one of the signs of puberty in children is late</b>		
Yes	1367	81.9
No	302	18.1
<b>Do you find it difficult to talk to a doctor about this topic</b>		
Yes	305	18.3
No	1364	81.7
<b>What are the first signs of puberty in girls</b>		
Hair appears	1043	62.4
Breast size change	1398	83.7
menstruation	887	53.1
Height increase	442	26.4
I do not know	22	1.3
<b>What are the first signs of puberty in boys</b>		
Hair appears	1093	65.4
Increase muscle mass	582	34.8
voice changes	1457	87.2
Height increase	656	39.3
<b>What symptoms should a mother notice on her daughter</b>		
Increase in the days of the session	969	58.05
Few in the days of the session	460	27.5
Regularity of the cycle	971	58.1
The amount of blood	716	42.8
Did the course affect the daily activity of the teenager?	768	46.01
Idle	828	49.4
Is the pain accompanying the session in a reasonable extent	971	58.1

		Educational level				Total (N=1669)	P value
		primary (N=29)	Intermediate (N=54)	Secondary(N=414)	University or higher (N=1172)		
<b>Do obesity and hereditary factors play a role in delaying or advancing adulthood</b>	Yes	17 58.6%	41 75.9%	337 81.4%	1019 86.9%	252 62.4%	0.0001
	No	12 41.4%	13 24.1%	77 18.6%	153 13.1%	152 37.6%	
<b>Do you know the</b>	Yes	20 69.0%	38 70.4%	311 75.1%	844 72.0%	1213 72.7%	0.604
	No						

<b>difference between primary and secondary puberty signs in girls and boys</b>	No	9	16	103	328	456	
		31.0%	29.6%	24.9%	28.0%	27.3%	
<b>Does the menstrual cycle disorder in the early years of puberty indicate a defect in the girl's body</b>	Yes	12	17	103	234	366	0.002
		41.4%	31.5%	24.9%	20.0%	21.9%	
	No	11	23	220	714	968	
		37.9%	42.6%	53.1%	60.9%	58.0%	
	Don't No	6	14	91	224	335	
		20.7%	25.9%	22.0%	19.1%	20.1%	
<b>Do you think it is the duty of the father or mother to communicate with the son to talk about puberty and its signs</b>	Father	23	46	361	1051	1481	0.153
		79.3%	85.2%	87.2%	89.7%	88.7%	
	Mother	6	8	53	121	188	
		20.7%	14.8%	12.8%	10.3%	11.3%	
<b>Do you think that it is the duty of the father or mother to communicate with the daughter to talk about puberty and its signs</b>	Father	3	2	11	50	66	0.154
		10.3%	3.7%	2.7%	4.3%	4.0%	
	Mother	26	52	403	1122	1603	
		89.7%	96.3%	97.3%	95.7%	96.0%	
<b>How do you deal with mood and psychological changes in puberty</b>	Respect them and direct them to useful interests	21	38	317	921	1297	0.133
		72.4%	70.4%	76.6%	78.6%	77.7%	
	Ignore the psychological factor	2	5	14	31	52	
		6.9%	9.3%	3.4%	2.6%	3.1%	
	Help them sometimes	6	11	83	220	320	
		20.7%	20.4%	20.0%	18.8%	19.2%	
<b>In your opinion, should a doctor be consulted when one of the signs of</b>	Yes	25	43	323	976	1367	0.100
		86.2%	79.6%	78.0%	83.3%	81.9%	
	No	4	11	91	196	302	
		13.8%	20.4%	22.0%	16.7%	18.1%	



puberty in children is late							
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### Discussion:-

A person enters a new period at the end of childhood known as juvenility, the conditions of which are entirely different from those of the preceding stage. Throughout puberty the most significant transition is the maturation process. It is of special significance and is seen as a landmark in young people's lives [11]. There are several pubertal processes that occur in different people at various ages and levels of development— and within the same individual [12]. Puberty includes maturational, hormonal, and growth process that occurs when the reproductive organs begin to function and the secondary sex characteristics develop [13]. When pubescent children are not informed of the changes that take place at puberty, it is traumatic to undergo these changes and may develop unfavorable attitudes towards these changes [14]. Parents' knowledge and awareness of child development influence their expectations of, and interactions with, their children [15]. There is evidence that parents, particularly mothers have some knowledge of factors that support optimal child development [16]. This is across sectional study was conducted among 1669 of the studied population, Saudi Arabia. The study aimed to determine knowledge of mothers about puberty signs among children in Saudi Arabia.

The results of our study showed that more than half of participants 68.1% had one or all of their children reached puberty, 74.3% noticed changes in the body of son / daughter during puberty and 72.9% of parents tried talking to their son / daughter about puberty. The majority 82.7% of mothers doesn't suffer from shame when asking their daughter about the signs of puberty, 64.5% noticed shy children when talking to them about signs of puberty and 93.2% prefer to tell their son or daughter about puberty. More than half 56.4% of mothers encounter difficulty in dealing with a child during adolescence and the most common difficulties reported were mood changes by 53.2%. Previous research indicated the effects of puberty on adolescents' mood, self-image, and interaction with peers and parents in addition, more than 50% of adolescent girls experience mild to severe stress due to pubertal changes [17].

According to the World Health Organization definition, adolescence covers the time between 10 and 19 years of age [18]. It is customarily viewed as beginning with the gradual appearance of secondary sexual characteristics at about 11 or 12 years of age and ending with cessation of body growth at 18 to 20 years [19]. In accordance to this, our study found that 74.7% of subjects reported 12 – 16 years as a normal age for puberty in boys but, in girls 82.7% reported 9-14 years as a normal age for puberty. A cross sectional study was carried 1554 parents out among at different region in Saudi Arabia reported that (89.7%) of participants know that females mostly reach pubertal age before males, similar to our results there were 80% think that normal pubertal age for males between 12-16 years however, (46.9%) think that normal pubertal age for females between 11-14 years [20].

The majority 89% of participants think that proper nutrition plays a role in this stage also, 84.7% said that obesity and hereditary factors play a role in delaying or advancing adulthood, 63.4% considered age of 15 years as a delay in puberty in girls but, in boys nearly same percentage reported age of 20-year-old. Results from another study showed that 72.5% of parents think that hereditary factors play a role for developing puberty but only 38.8% think that obese child have a higher chance to develop puberty [20].

Our study reported that 72.7% know the difference between primary and secondary puberty signs in girls and boys, 58% think that the menstrual cycle disorder in the early years of puberty not indicate a defect in the girl's body 70.5% know what are safe painkillers in the menstrual period, two third of cases (60.8%) think that menstrual cycle is organized for girls from 15-16 years.

The results of multiple studies have shown that parents play the most important role in transferring this information to their children. As regards the role of parents in this stage, 88.7% of subjects think that it is the duty of the father to communicate with the son to talk about puberty and its signs, 96% report mother to communicate with the daughter to talk about puberty and its signs and the majority don't think it is right for girls or boys to ask each other about signs of puberty instead of their parents however, they don't warn their daughter or son not to talk to her teachers or her friends about puberty and its signs. One study found that mothers considered it their duty to provide information to their girls regarding puberty and emphasized menstruation education, compliance with legal issues, and subtle education on sexual issues [21].

The onset of puberty is recognized by the manifestation of secondary sexual characteristics that include testicular enlargement in males and breast enlargement in females and pubic/axillary hair in both [22]. Our study found that in girls, the majority 83.7% reported breast enlargement as a first signs of puberty followed by appearance of pubic/axillary hair 62.4%, menstrual cycle 53.1% and 26.4% for increase in length. In boys, 87.2% of cases reported change in voice as a first signs of puberty, 65.4% appearance of pubic/axillary hair, 39.3% length increase and 34.8% for body change.

Regarding to the symptoms should a mother notice on their daughter during puberty, 58.5% reported increase in the days of the session, 58.1% regularity of the cycle, 46% note that the daily activity of the teenager affects by this stage and 42.8% the amount of blood.

Regarding to relations between educational level and knowledge about puberty, we found that there was no significant relation with different knowledge aspects like the difference between primary and secondary puberty signs in girls and boys, the duty of the father or mother to communicate with the son or daughter to talk about puberty and its signs and how do you deal with mood and psychological changes in puberty ( $p>0.05$ ). However, significant relations found with thinking obesity and hereditary factors play a role in delaying or advancing adulthood and who think the menstrual cycle disorder in the early years of puberty indicate a defect in the girl's body ( $p<0.05$ ). Another study found that education level was significantly and positively associated with the overall knowledge about puberty [23]. Also, in Iran results from another study showed that mother's education was correlated with her knowledge about puberty ( $P < 0.001$ , but level of education did not have a correlation [21]. However, in Indonesia another study found that there was no significant relationship between maternal education level and students' understanding of normal puberty development ( $p>0.05$ ) [24]. Karimi conducted a study in Tehran on the effects of the education of mothers on attitudinal, emotional, and behavioral issues in puberty [25]. The influence of education on mothers' knowledge about puberty health was reported by Najafi et al [26] who reported the presence of such correlation.

### **Conclusion:-**

Medical awareness campaigns and conferences for mothers to increase their knowledge of the signs of puberty among their children should be carried out in Saudi Arabia.

### **Limitations:**

For convenience, the researcher has chosen the population.  
Shortage of time and resources are important limitations

### **Service:**

The researcher hopes to increase the Raise of awareness and knowledge of mothers about puberty signs among their children.

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