

Cumulative impact of early maternal marital age during the childbearing period

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Summary

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Early marriage of girls, close to age of menarche, is a widespread practice in Arab countries. Knowledge on the cumulative effect of early maternal marriage on maternal and infant health during the childbearing period is insufficient. The objectives of this study were to estimate the prevalence of early maternal marriage in Jeddah, identify its relation with other maternal risk factors, and investigate the cumulative impact of early maternal marriage on subsequent maternal health and pregnancy outcomes throughout the reproductive period. Data were collected from six randomly selected primary health care units in Jeddah City. Married women with an infant ≤ 12 completed months of age were interviewed and information on sociodemographic characteristics, maternal health and previous pregnancy outcomes were collected. Early marriage of girls before the age of 16 years accounted for 26.5% of the study population and was reported by a third of mothers currently below the age of 20 years. Illiterate mothers, housewives, multiparae, smokers and those married to a relative reported the highest proportion of marriages before their sixteenth birthday. Those who married before the age of 16 were at about double the risk of developing chronic diseases and experiencing miscarriage, stillbirths and infant deaths. These results suggest that early maternal marriage still exists in our community and is intimately related to other maternal risk factors. Maternal marriage < 16 years appears to be fraught with insecurities for the mother and infant throughout the whole length of the childbearing period and not merely the first pregnancy. Thus, even if culture norms claim early marriage of girls, it should be discouraged before the age of 16 years. Moreover, it is recommended that future research on maternal and infant health considers the cumulative effect of the various risk factors during the whole reproductive period and not only a single pregnancy outcome.

Introduction

It is very difficult to define where maternal and infant health begins. In dealing with this discipline, one should recognise that it is an outcome of many intervening factors that start as early as the mother's infancy, childhood and adolescence. The health professionals have begun to move from a narrow concept to a more inclusive one that recognises the role of fundamental issues substantially influencing maternal and infant health.

The Arab world is bounded by cultural norms that emanate from traditions and beliefs of protecting

young girls. Traditionally, girls marry at an early age close to the age of menarche. This phenomenon is not unique for the Kingdom but is dominant in the Middle East Area.¹⁻³ At present, few investigations come from this part of the world and our understanding of the impact of early marriage of girls on maternal and infant health is mostly derived from studies in Western countries,⁴⁻⁷ where the problem is completely different. In the developed countries, early childbearing is mostly against the family's will and without a well-established marital life, and the coming newborn is usually unwanted. In the Arab world, the

situation is different as early maternal marriage is encouraged by the families, early childbearing is a means to confirm fertility of the newly married couple and the newborn is mostly welcomed by members of the whole family.⁴ Moreover, extensive studies that have been performed in developed countries to outline the role of young maternal age on maternal and infant health have been directed at the first pregnancy and its outcome.⁵⁻¹⁵ Our knowledge of the cumulative effect of biologically immature bodies engaged early in the process of pregnancy and delivery on subsequent maternal and infant health during the childbearing period, is still lacking.

The objectives of this study were to: (1) estimate the prevalence of early maternal marriage (before the age of 16) in Jeddah; (2) identify the relation between early marriage of girls and other maternal risk factors; and (3) study the cumulative impact of early maternal marital age on subsequent maternal and infant health throughout the reproductive period.

Methods

Site

Saudi Arabia with its population of 18.8 million comprises most of the Arab Peninsula. Jeddah City is one of the largest cities of the Kingdom of Saudi Arabia with a population of 2.1 million.¹⁶ In Jeddah, primary health care units serve the majority of the population of low and medium social class. They provide promotive, preventive and curative services that offer essential care to the population of Jeddah City and affiliated regions.

Data collection and analysis

Data were collected from six primary health centres selected randomly from March to June 1997. All married women, having at least one infant and attending the well-baby clinic, were included in the study. A structured questionnaire was completed for every woman who was interviewed by trained medical staff. The questionnaires included the socio-demographic characteristics of the mother (age, nationality, education, working status, age at marriage, age at first childbirth, consanguinity and parity), as well as a history of chronic diseases, the number of previous miscarriages, fetal deaths and/or infant mortality that she has experienced during her

reproductive life. Multiparity was defined as having at least five living children. Chronic diseases were only considered if they were diagnosed after marriage by medical professionals and marked in the primary health care unit's records. According to the definitions used in Saudi Arabia, miscarriage was defined as any loss of fetus before 28 weeks of gestation, fetal death as any infant born dead at 28 weeks gestation or thereafter and infant mortality as any infant born

Table 1. Characteristics of mothers attending primary health care units in Jeddah

Variables	No. (%)
Current age (years)	
< 20	28 (7.0)
20-29	185 (46.3)
30+	187 (46.8)
Marital age (years)	
< 16	106 (26.5)
16-19	150 (37.5)
20-24	107 (26.8)
25+	37 (9.3)
Age at first childbirth	
< 16	39 (9.8)
16-19	160 (40.0)
20-24	141 (35.3)
25+	60 (15.0)
Nationality	
Saudi	267 (66.8)
Non-Saudi	133 (33.3)
Education	
Illiterate	158 (39.5)
Primary school	85 (21.3)
Intermediate school	109 (27.3)
Secondary school	45 (11.3)
University and above	3 (0.8)
Working status	
Housewife	351 (87.8)
Working	49 (12.3)
Consanguinity	
No	174 (43.5)
1st degree	119 (29.8)
2nd and 3rd degrees	107 (26.8)
Parity	
1	67 (16.8)
2	61 (15.3)
3	48 (12.0)
4	52 (13.0)
5+	172 (43.0)
Smoking habits	
No	345 (86.3)
Cigarette only	8 (2.0)
Water pipe only	30 (7.5)
Cigarette and water pipe	17 (4.3)

alive who died during the first year of life.¹ The quality of information collected from the mother was validated using her medical record in the antenatal clinic and her child's medical record in the well-baby clinic. Mothers with incomplete medical records were excluded from the study.

Statistical analysis

Statistical analysis was carried out using SPSS for windows (version 7.5). The chi-square test was used to detect significant differences between proportions. Logistic regression models were fitted to calculate the adjusted odds ratio (OR) for chronic diseases and unfavourable pregnancy outcomes by women's marital age. Adjustment was carried out for women's current age and parity as continuous variables and nationality, literacy status and consanguinity as dichotomous variables. The dependent outcome was 0 for never experienced a chronic disease or an unfavourable pregnancy outcome, and 1 for experiencing, at least once, a chronic disease or an unfavourable pregnancy outcome during the childbearing period. Unfavourable pregnancy outcome refers to miscarriage, fetal death and/or infant mortality.

Results

A total of 400 married women were included in the study (Table 1). Their current age ranged from 15 to 45 years (mean = 28.7, SD = 6.3). Around 7.0% were below 20 years of age. Their marital age ranged from 10 to 36 years and the mean marital age was 18.5 years (SD = 14.1). Also, 26.5% of women reported marriage before the age of 16 years and 9.8% had their first child before their sixteenth birthday. The majority were Saudis (66.8%) and housewives (87.8%). Illiteracy was reported by 39.5% of mothers and only 0.8% reached university level. Parity ranged from 1 to 12 with a mean of four children and multiparity accounted for 43.0%. More than half of marriages were consanguineous, mostly of first-degree relationships. Smoking was reported by 13.8% of women with water pipe smoking the commonest habit.

Early marriage (Table 2) appears still to exist in our society. Approximately, one-third of mothers in all age groups reported marriage before their sixteenth birthday, even those who were currently below 20 years of age. Nearly all mothers who married before the age of 16 gave birth either before that age or at most by the 16–17 years range. The proportion of marriages < 16

Table 2. Relation between maternal marital age and maternal risk factors among mothers attending primary health care units in Jeddah

Variables	n	Maternal marital age (< 16 years)		P
		No.	Mean	
Current age (years)				0.585
< 20	28	9	32.1	
0–29	185	45	24.3	
30+	187	52	27.8	
Age at first childbirth (years)				0.000
< 16	39	38	97.4	
16–19	160	52	32.5	
20–24	141	12	8.5	
25+	60	4	6.7	
Nationality				0.133
Saudi	267	77	28.8	
Non-Saudi	133	29	21.8	
Education				0.000
Illiterate	158	61	38.6	
Primary school	85	30	35.3	
Intermediate school	109	10	9.2	
Secondary and above	48	5	10.4	
Working status				0.085
Housewife	351	98	27.9	
Working	49	8	16.3	
Consanguinity				0.104
No	174	39	22.4	
Yes	226	67	29.6	
Multiparity				0.000
No	228	36	15.8	
Yes	172	70	40.7	
Smoking habits				0.639
No	345	90	26.1	
Yes	55	16	29.1	

dropped significantly as maternal education advanced. Early maternal marriage was significantly higher among multiparae as 40.7% of them married before the age of 16 years compared with 15.8% of women having less than five children. Women of Saudi nationality showed a tendency to earlier marriages than non-Saudis but results did not reach statistical significance. Also, early marriage was marked among housewives, smokers and consanguineous marriages but again, results did not reach statistical significance.

Around 19.5% of women reported having at least one chronic disease in the form of hypertension, diabetes mellitus or uterine prolapse diagnosed by a physician and which developed after marriage. Also, 28.0% of women reported at least one miscarriage,

Table 3. Relation between maternal marital age and maternal and infant health among mothers attending primary health care units in Jeddah

Variables	Maternal marital age (< 16 years)			<i>P</i>
	<i>n</i>	No.	%	
Maternal chronic diseases				0.505
No	322	83	25.8	
Yes	78	23	29.5	
Miscarriage				0.019
No	288	67	23.3	
Yes	112	39	34.8	
Fetal death (FD)				0.377
No	380	99	26.1	
Yes	20	7	35.0	
Infant death (INFM)				0.006
No	368	91	24.7	
Yes	32	15	46.9	
FD+INFM				0.008
No	350	85	24.3	
Yes	50	21	42.0	
Miscarriage+FD+INFM				0.006
No	259	57	22.0	
Yes	141	49	34.8	

5.0% fetal death and 8.0% infant death. At least one experience of complete infant loss (either through miscarriage, fetal death and/or infant death) was reported by 35.3% of women. Mothers who reported chronic diseases, previous miscarriage, fetal death, and/or infant death showed the highest proportion of marriage before the age of 16 years; results were significant for miscarriage and infant death either alone or in combination with one another or with fetal death (Table 3).

The logistic regression analyses (Table 4) show that mothers who married before the age of 16 were at about double the risk of chronic disease [95% confidence interval (CI) = 1.1, 4.6] and miscarriage [95% CI = 1.1, 3.0] during the childbearing period. As the number of fetal and infant deaths reported were very few, the impact of young marital age on unfavourable pregnancy outcome was more apparent when they were grouped together (OR = 1.8, 95% CI = 0.9, 3.6) or when they were added to miscarriage (OR = 1.8, 95% CI = 1.1, 3.0).

Discussion

Maternal and infant health during the reproductive period are a single rubric and there is no advantage in

looking at them as different situations. The environment in which girls grow to womanhood undoubtedly affects their health and pregnancy outcome. Thus, it is wise to try to intervene early in the future mother's development. The results of this study confirm previously published research on the existence of maternal risk factors in our society.^{1,3,17} Moreover, they emphasise the intimate relationship between early maternal marriage and other maternal risk factors.

Our results have shown that early maternal marriage was common among the study population and accounted for 26.5% of women. The mean marital age was 18.5 years, slightly higher than previously published data for Saudi Arabia that reported a younger mean marital age of 16.8 years.¹ However, a third of current young mothers (currently < 20 years) married before the age of 16 years. This confirms that early maternal marriage is still present and is not an old practice. Around 10.0% of mothers had their first baby before their sixteenth birthday and those who married before the age of 16 years mostly gave birth before that age. This confirms the fact that early childbearing is encouraged and women who marry early will deliver early and pregnancies are not postponed to older age.

Approximately, 39.5% of women were illiterate and 87.8% were housewives. Illiterate mothers and house-

Table 4. Adjusted odds ratio for the impact of maternal marital age on maternal and infant health among mothers attending primary health care units in Jeddah

Variables	Maternal marital age	Odds ratio [95% CI]	<i>P</i>
Maternal chronic diseases	< 16	1.8 [1.1, 4.6]	0.043
	16+	1.0 Reference	
Miscarriage	< 16	1.8 [1.1, 3.0]	0.041
	16+	1.0 Reference	
Fetal death (FD)	< 16	1.3 [0.5, 3.7]	0.641
	16+	1.0 Reference	
Infant death (INFM)	< 16	2.0 [0.9, 4.7]	0.095
	16+	1.0 Reference	
FD+INFM	< 16	1.8 [0.9, 3.6]	0.099
	16+	1.0 Reference	
Miscarriage +FD+INFM	< 16	1.8 [1.1, 3.0]	0.033
	16+	1.0 Reference	

wives were those who married early showing the highest proportions of marriages before the age of 16 years but results were only significant for education level. Female illiteracy and unemployment are two factors documented to have a negative impact on maternal and infant health^{2,18-24} and are prominent in the Middle East Region.^{1-3,25,26}

Parity ranged from 1 to 12 children with a mean of four children. Multiparity of at least five children accounted for 43.0% of women. However, multiparae were those showing the highest proportion (40.7%) of marriages before the age of 16 years. These results demonstrate this potential risk factor^{23,24} that is dominant not only in the Kingdom but also in most of the Middle East Area.^{1-3,25,26}

Consanguineous marriage appears to be a widespread practice in the Kingdom^{1,3} related to culture norms, and was seen from the data to account for more than half of marriages. This strikingly high proportion has been reported in developing countries particularly the Arab world.²⁷⁻³¹ The proportion of early maternal marital age was higher among consanguineous marriages than non-consanguineous marriages but results did not reach statistical significance.

Smoking habits were reported by 13.8% of women and water pipe smoking appeared to be the dominant habit rather than cigarette smoking. Although smokers reported a higher proportion of early marriages than non-smokers, smoking habits were not shown from our study to be related to early maternal marriage. This could be partly because of the quality of this information as women are still embarrassed to admit to such practice. Women of Saudi nationality appeared to tend more towards early marriage than non-Saudis as they showed higher proportion of marriages before the age of 16 years. However, results did not reach statistical significance.

A total of 19.5% reported chronic diseases, 28.0% miscarriages, 5.0% fetal deaths and 8.0% infant mortality. This gives a total of 35.3% that reported the loss of at least one fetus or infant at any stage during the childbearing period. The low reported number of fetal deaths could be explained by either misuse of the definition or as a means to overcome the official process in case of fetal deaths. Under-registration was previously documented in other studies¹ but no research has been carried out yet to measure the reliability of the registration system.

The logistic regression analyses show that mothers who married before their sixteenth birthday remain,

throughout the childbearing period, at about double the risk of experiencing chronic disease [95% CI = 1.1, 4.6], miscarriage (CI = 1.1, 3.0), stillbirth or infant death [95% CI = 0.9, 3.6]. When all unfavourable pregnancy outcomes were combined together, early maternal marriages were still at about double the risk [95% CI = 1.1, 3.0] of losing a fetus or infant at any stage during the reproductive life. These results confirm previously published data that showed young marital age as the underlying cause of poor pregnancy outcome.⁵⁻⁸ Moreover, they produced insights on the cumulative impact of maternal marital age on the entire childbearing period, which could be the possible reason for studies that failed to detect the relationship between young maternal age and single pregnancy outcome.⁹⁻¹⁵

It seems that the early marriage of girls is fraught with insecurities throughout the childbearing period. The average age of menarche worldwide is about 13.0 years³² and the girl requires 2-3 years to achieve physical and biological maturity after the onset of menstruation.^{33,34} Thus, girls who marry before their sixteenth birthday, by age alone, fall into a high-risk group as they are physically, biologically and psychologically too immature to cope with the demands of the childbearing period.^{20,32-34} Women who marry before the age of 16 years remain at highest risk of chronic diseases, miscarriage, fetal and infant death during the whole length of the childbearing period. Moreover, early marriage cuts short women's education and employment chances and is mainly among first-degree relatives. It burdens the girls with frequent pregnancy, childbearing and excess responsibilities that start at an immature age. These are additional factors that aggravate the impact of early marriage upon the mother's health and pregnancy outcome.

Consequently, it is recommended that even if early marriages are preferred and adopted as cultural norms, they should be discouraged before the age of 16 years. It is highly recommended that education programmes should be directed to the parents and the girls themselves to provide scientific information on the health and socio-economic problems of early marriage. Fruitful recommendations include the encouragement of girls' education that will motivate women to continue their career, discourage early marriage, have a better marriage prospect and even if cultural norms compel consanguineous marriages, girls will be aware of the importance of premarriage counselling and access to medical care services throughout their reproductive life. Education will also

heighten the mother's awareness that will be reflected in the quality of her life and that of her offspring.

It is recommended that future studies consider maternal and infant health during the whole length of the reproductive period. The cumulative impact of the various maternal risk factors will then be apparent and will reveal the true impact that cannot be detected from a single pregnancy experience.

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