# Girl Child Marriage and Its Effect on Fertility in Pakistan: Findings from Pakistan Demographic and Health Survey, 2006–2007

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**Abstract** Child marriage (before 18 years) is prevalent in Pakistan, which disproportionately affects young girls in rural, low income and low education households. Our study aims to determine the association between early marriage and high fertility and poor fertility health indicators among young women in Pakistan beyond those attributed to social vulnerabilities. Nationally representative data from Pakistan Demographic and Health Survey, 2006–2007, a cross-sectional observational survey, were limited to ever-married women aged 20–24 years (n = 1,560; 15 % of 10,023) to identify differences in poor fertility outcomes [high fertility (three or more childbirths); rapid repeat childbirth (<24 months between births); unwanted pregnancy (any ever); pregnancy termination (any stillbirth, miscarriage or abortion ever)] by early (<18) versus adult (≥18) age at marriage. Associations between child marriage and fertility outcomes were assessed by calculating adjusted odds ratios (AORs) using logistic regression models after controlling for demographics, social equity indicators (education, wealth index, rural residence), contraception use, marriage duration and culture-specific factors (husband's desire for more children, son preference). Overall, 50 % of ever-married women aged 20–24 years in Pakistan were married before the age of 18 years. Girl child marriage was significantly ($p < 0.001$) associated with low social equity indicators (poverty, rural residence, and no formal education). Adjusted logistic regression models showed that girl child marriage was significantly associated with high fertility (AOR 6.62; 95 % CI 3.53–12.43), rapid repeat childbirth (AOR 2.88; 95 % CI 1.83–4.54), unwanted pregnancy (AOR 2.90; 95 % CI 1.75–4.79), and pregnancy termination (AOR 1.75; 95 % CI 1.10–2.78). Girl child marriage affects half of all ever-married women aged 20–24 years in Pakistan, and increases their risk for high fertility and poor fertility health indicators, highlighting the need of increasing the age of marriage among women in Pakistan. Efforts to eliminate girl child marriage by strict law enforcement, promoting

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civil, sexual and reproductive health rights for women can help eliminate girl child marriage in Pakistan.

## Introduction

Marriage prior to the age of 18 years among women, also called child marriage by most international groups [1, 2], affects around 10 million teenage girls every year, worldwide [3]. Despite association of child marriage with high maternal and child morbidity and mortality [4–8], such as grand multiparity [9] and low-birth weight infants [10], 48 % of young women in South Asia are married before the age of 18 years [1]. Women living in impoverished areas, with low education status and high gender inequalities are at increased risk for girl child marriage [1, 2, 5]. According to the United Nations Millennium Development Goals report 2011, even though progress has been made in improving maternal health, reducing child mortality, promoting gender equality and women empowerment but targets are far from its reach, especially in South Asia [11]. Therefore, United Nations has prioritized these goals which underscore the need of reducing child marriage and its effect on maternal and child health.

Girl child marriage, which is commonly practiced in Pakistan [12] disproportionately affects girls of lower socioeconomic status and those residing in rural regions [13, 14]. Even though mean age of marriage among women in Pakistan has significantly increased from 13.3 years during 1950–1959 to 23.1 years during 2006–2007 with steady gains over time (16.8 years during 1960–1969; 17.8 years during 1970–1979; 18.6 years during 1980–1989; 21.7 years during 1990–1991) [15, 16], the overall age at marriage is still lower as compared to industrialized countries [17]. Culturally, in Pakistan, women are at disadvantage from birth and are predisposed to discrimination on the basis of their sex [18, 19]. Male gender is preferred over females as males are often perceived as an economic and social utility in families because of breadwinner of house [18]. Gender inequality can be further assessed by an imbalance in the sex ratio (91 women for every 100 men) in Pakistan when compared with industrialized countries [20]. Female infants are provided less care with fewer family resources as compared to their male counterparts, resulting in high mortality among females in Pakistan [20]. The neglect of girls continues in their later childhood and adolescence with only 25 % of women able to complete their primary education as compared to 49 % of men in Pakistan [20]. Females are often considered economic liability to a family because of dowry tradition in the country [21]. The dowry tradition that is largely practiced in Pakistan consists of exchange of wealth, either in the form of money or gifts, before and after the marriage among bride's and groom's family, and is often misused by the husband and his family; the older the girl, the higher the likelihood of dowry demand [12, 21]. Dowry tradition, as a result, increased the likelihood of women to get married at much younger age [22] that make them economically and socially dependent on family support.

Despite steady increase in age of marriage overtime in Pakistan, the national data show close relationship of marriage and childbearing [13]. Overall, 42 % of women got pregnant prior to the age of 20 years during 2001–2002 in Pakistan [13]. Further, among ever-married women aged 20–24 years, 89 % had at least one pregnancy and 24.5 % had at least one childbirth during 2001–2002 [13]. Husband's desire for more children and son preference among couples in Pakistan have been attributed to high fertility and low contraception use among women [23–25] but whether these phenomena influence younger mothers more than adults is not known. Early pregnancy and child birth predisposes these young girls to high maternal mortality, and perinatal and infant mortality, which when coupled with limited healthcare access and low antenatal services [13] leads to poor health outcomes. This disproportionate risk of high maternal morbidity and mortality however, seems to be related to social vulnerabilities such as increased poverty, lack of education, and cultural and structural barriers, especially in rural areas of Pakistan [19, 26]. Therefore, it is important to understand the impact of early marriage on high fertility and poor fertility outcomes regardless of women's economic status, education, ethnicity, and place of residence. Our study is the first in Pakistan to determine the association between early marriage and high fertility and poor fertility health indicators among young women using nationally representative data from Pakistan Demographic and Health Survey (PDHS), 2006–2007, the most recent data available.

## Methods

### Sample of Participants

The participants for this study were selected from the PDHS carried out by the National Institute of Population Studies, Islamabad, Pakistan and Macro International Inc. Calverton, Maryland, USA between September 2006–February 2007 [16]. PDHS is the largest household-based survey ever conducted in Pakistan, and is the fifth national survey on demographic and health issues in Pakistan. Teams visited 972 sample points across Pakistan and collected data from a nationally representative sample of over 95,000 households [16].

Trained interviewers administered the survey in either national language (Urdu) or one of three regional languages (Punjabi, Sindhi, and Pushto) depending on the preference of household members. A nationally representative household-based sample was obtained by a two-stage, stratified, random sample design excluding the Federally Administered Northern Areas (FANA), Federally Administered Tribal Areas (FATA), and restricted military and protected areas. The first stage involved selecting clusters with probability proportional to size. The smaller provinces (e.g., Balochistan and North Western Frontier Province) and urban areas were over-sampled. In urban areas, the sample points were selected from a frame including households maintained by the Federal Bureau of Statistics. The frame for rural areas consisted of the list of villages enumerated in the 1998 population census. In both urban and rural areas, households were selected in second stage by systematic random sampling technique. In the 9,255 households interviewed, a total of 10,601 ever-married women aged 15–49 years were identified, of whom 10,023 were successfully interviewed, yielding a response rate of 95 percent. The detailed methodology of survey design, data collection and management has been described elsewhere [16]. We defined child marriage as marriage before 18 years of age. For this study, the sample was limited to ever-married women aged 20–24 years (n = 1,560; 15.6 % of the sample aged 15–49 years) to identify differences in fertility outcomes between child and adult marriage. The age range, 20–24 years among ever married women was used to allow indication of recent rates of girl child marriage while still providing sufficient time for comparison of those married as minors versus those married as adults. Further, 20–24 years age range has been used in several international publications, including United Nations Children's Fund (UNICEF) [8, 27, 28].

### Survey Instrument and Data Management

The demographics of the participants were assessed by questions regarding age, level of education, area of residence, national region of residence, and ethnicity. Area of residence was categorized into urban and rural areas. Urban areas were classified into large cities (capital cities and cities with over 1 million population), small cities (population 50,000–1 million) and towns (population <50,000), while all rural areas were assumed to be countryside. A wealth index was calculated in quintiles based on ownership of consumer items and dwelling characteristics between 1 (poorest) and 5 (wealthiest). Contraception use was assessed by a question whether a participant ever used a modern, traditional or any other method of contraception. Culture-specific factors were assessed by two variables, husband's desire for more children and son preference.

Husband's desire for more children was assessed by a question "whether the respondent believes her partner wants the same number of children, more children or fewer children than she wants herself." The variable was dichotomized, if partner wants same or fewer children versus more children. Preference for son was calculated from ideal number of boys and girls that the respondents would have liked to have in their whole life.

Childbirth in the first year of marriage was assessed by a question about the duration of first marriage before first birth; women who had not given birth were classified as not having childbirth in the first year of marriage. High lifetime fertility was assessed by the participants' number of childbirths, which was assessed by a question of total number of children ever born during the lifetime, and those who had three or more childbirths [28]. Rapid repeat childbirth was defined as a repeat childbirth in less than 24 months, which was assessed by questions about the number of months between each child birth [28]. Whether women ever had an unwanted pregnancy was assessed by a question if a woman wanted the child at birth, wanted the child later, or did not want any more child. Participants were categorized as having an unwanted pregnancy if they reported a pregnancy within which they wanted the child later or did not want any more child. We assessed pregnancy termination by a question if a participant's pregnancy had ever resulted in miscarriage, abortion, or stillbirth.

### Data Analysis

The prevalence of child marriage and its descriptive statistics was calculated for a total sample of women aged 20–24 years. The characteristics of child marriage were compared with adult marriage using Chi square test. We considered two-tailed $p$ value of <0.05 to be statistically significant. Associations between child marriage and fertility outcomes were assessed by calculating adjusted odds ratios (AORs) with 95 % Confidence Interval (CI) using logistic regression models after controlling for age, social equity indicators (education, wealth index, rural residence), contraception use, and marriage duration (a consequence of early marriage). The models were not adjusted for ethnicity because of collinearity with region of residence. Separate regression analyses were conducted also adjusting for culture-specific factors i.e. husband's desire for more children and son preference that have shown to affect fertility in Pakistan [23–25]. To further explore the relationship of early marriage and fertility outcomes, we performed nuanced analysis by age of marriage and compared women married at ages <14 years, 14–15 years, 16–17 years with those married at age ≥18 years. We used Nagelkerke's R-square for the goodness-of-fit for all logistic regression models which is an adjusted version of the Cox and Snell

R-square that adjusts the scale of the statistic to cover the full range from 0 to 1 [29]. All the data were weighted and analyzed using SPSS Complex Samples procedure (IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.) to account for selection probability, non-response, and sampling differences between regions to produce national estimates of the national population. We calculated weighted percentages of the national population including the absolute numbers of participants from the original sample. Weighted percentages without the absolute numbers of participants are presented in the text.

## Results

### Sample Characteristics

Among the sample of ever-married women aged 20–24 years (n = 1,560) the mean age of first marriage was 17.52 years (SD 2.68 years). Five percent, 23.7 and 50.1 % of participants were married at the age of <14, <16 and <18 years respectively (Table 1). Majority (57.6 %) of women married as children had no formal education and resided in rural areas (70.0 %). Women married as children were mostly from Punjab province (53.1 %), and were Punjabis (35.5 %) (Table 1). Overall, in a sample of ever-married women aged 20–24 years, 74.9 % had at least one childbirth, 31.6 % had their first childbirth during the first year of their marriage, 19.9 % had high fertility (≥3 births), and 28.6 % had repeated childbirths within 24 months (Table 3). Almost one-fifth of ever-married women aged 20–24 years had termination of pregnancy at least once, 33.8 % preferred sons over girls, 23.1 % reported her partner wanted more children than herself, and only 29.8 % of women ever used contraception.

### Simple Associations Between Child Marriage and Socio-Demographic Characteristics

There were significant differences in demographics and social equity indicators among women aged 20–24 years who were married earlier than 18 years compared to those who were married ≥18 years ($p < 0.01$). The prevalence of child marriage was disproportionately more among young (61.9 vs. 46.0 %), uneducated (59.8 vs. 11.0 %), poorest (69.1 vs. 26.3 %) girls, who resided in rural areas (54.0 vs. 40.9 %) (Table 2). The prevalence of child marriage was also higher among Balochis, Siraikis, and Sindhis relative to other ethnic groups. The prevalence of contraception was higher among women married as children as compared to women married as adults (54.9 vs. 45.1 %). Women married as children as compared to adult also reported higher proportion of husband's desire for more children (59.4 vs. 40.6 %).

### Associations Between Child Marriage and Fertility Indicators

Women married as children compared with women married as adults were more likely to have at least one childbirth (AOR 5.16; 95 % CI 3.35–7.93), had three or more childbirths (AOR 6.44; 95 % CI 3.34–12.41), had at least one unwanted pregnancy (AOR 2.80; 95 % CI 1.68–4.66), had rapid repeat childbirth (AOR 2.97; 95 % CI 1.95–4.52), and had at least one pregnancy termination (AOR 1.87; 95 % CI 1.21–2.88) (Table 3). Women married as children were also less likely to have childbirth in first year of marriage (AOR 0.62; 95 % CI 0.47–0.83) as compared with women married as adults.

Regression analyses adjusted for husband's desire for more children and son preference, showed that women married as children remained significantly more likely to have given at least one childbirth, had three or more childbirths, had at least one unwanted pregnancy, had rapid repeat childbirth, and had at least one pregnancy termination (Table 3). In addition, women married as children remained consistently less likely to have childbirth in first year of marriage.

The nuanced analysis by age of marriage showed that all age groups (<14, 14–15, 16–17) as compared to those married ≥18 years were significantly associated with increased likelihood of at least one childbirth, three or more childbirths, rapid repeat childbirth, and at least one unwanted pregnancy with relatively higher odds among women married below 14 years followed by 14–15 years and 16–17 years in the adjusted models, except at least one child birth where women married at 16–17 years had higher odds than those married at 14–15 years (Table 4). Also, all age groups compared to those married ≥18 years were significantly associated with decreased likelihood of having childbirth in first year of marriage. However, pregnancy termination was only found associated with women married at the age of 16–17 years as compared to those married ≥18 years in the adjusted models.

## Discussion

Our study showed that half of ever-married women aged 20–24 years in Pakistan were married before the age of 18 years; nearly quarter of these women married before the legal age of 16 years. As seen in previous studies [1, 2, 5], women who experienced greater social inequities (i.e., poverty, rural residence, no education) were at increased risk for girl child marriage, as were Balochis, Siraikis, and Sindhis compared with other ethnic groups in Pakistan. However, even after accounting for these social equity indicators known to also be associated with higher fertility

**Table 1** Prevalence of child marriage and characteristics including social equity indicators of ever-married women aged 20–24 years, Pakistan Demographic and Health Survey, 2006–2007

|  | Participants (N = 1,560) | Weighted % |
| --- | --- | --- |
| Age of marriage(years) | | |
| <14 | 86 | 5.2 |
| <16[a] | 381 | 23.7 |
| <18[b] | 782 | 50.1 |
| Age of women (years) | | |
| 20 | 358 | 22.6 |
| 21 | 232 | 14.3 |
| 22 | 353 | 24.0 |
| 23 | 270 | 16.6 |
| 24 | 347 | 22.5 |
| Highest level of education | | |
| No education | 916 | 57.6 |
| Primary | 269 | 18.1 |
| Secondary | 277 | 18.9 |
| Higher | 98 | 5.3 |
| Area of region | | |
| Punjab | 591 | 53.1 |
| Sindh | 490 | 27.8 |
| North Western Frontier Province | 311 | 14.5 |
| Balochistan | 168 | 4.6 |
| Type of place of residence | | |
| Urban | 534 | 30.0 |
| Rural | 1,026 | 70.0 |
| Wealth index | | |
| Poorest | 313 | 19.6 |
| Poorer | 362 | 22.9 |
| Middle | 303 | 20.0 |
| Richer | 302 | 19.2 |
| Richest | 280 | 18.3 |
| Ethnicity | | |
| Urdu | 95 | 6.7 |
| Punjabi | 396 | 35.5 |
| Sindhi | 271 | 14.6 |
| Pushto | 326 | 14.1 |
| Balochi | 86 | 3.8 |
| Siraiki | 241 | 17.2 |
| Other | 145 | 8.0 |
| Contraception use (ever) | | |
| No | 1,107 | 70.2 |
| Yes | 453 | 29.8 |
| Duration of marriage (years) | | |
| 0–4 | 912 | 59.1 |
| 5–9 | 590 | 36.9 |
| 10–14 | 58 | 4.0 |

**Table 1** continued

|  | Participants (N = 1,560) | Weighted % |
| --- | --- | --- |
| Husband's desire for more children | | |
| No | 854 | 76.9 |
| Yes | 306 | 23.1 |
| Son preference | | |
| No | 1,014 | 66.2 |
| Yes | 543 | 33.8 |

Data are weighted % of participants in each subsample while numbers are absolute participants

Absolute number of participants does not perfectly correspond to percentages because the percentages are weighted

[a] Included women aged <14 years (n = 86)

[b] Included women aged <16 years (n = 381)

indicators [7], along with contraception, duration of marriage and few culture-specific factors, history of early marriage increased women's risk for high fertility and poor fertility outcomes such as unwanted pregnancy, rapid repeat childbirth, and termination of pregnancy. These findings document that early marriage of girls, while apparently less common than that seen in other nearby nations such as India, Nepal and Bangladesh [27] remains a huge concern for Pakistan and is compromising maternal and child health of the nation.

Child marriage is a clear violation of Universal declaration of Human Rights 1948 and International Covenant on Civil and Political Rights 1966 [30]. Despite Pakistan's commitment with international community to eliminate customs and practices, which constitute discrimination against women through Convention on the Elimination of All Forms of Discrimination Against Women 1979 (CEDAW), and prohibiting traditional practices that are harmful to the health of children through Convention on the Rights of the Child 1989 (CRC), the progress in reducing gender inequality and child marriage is abysmal in the country [30]. With this meager progress it is unlikely that the country would soon meet its millennium goals of universal primary education, improving maternal health, reducing child mortality, and promoting gender equality [11].

Pakistan is facing several challenges in dealing with child marriage issue. The Child Marriage Act Restraint 1929 prohibits the marriages of children below the age of 16 for girls and 18 for boys [31]. However, efforts have been made to increase the age to 18 years for girls via The Child Marriages Restraint (Amendment) Bill 2009 and The Charter of Child Rights Bill 2009 in recognition that the factors such as poverty, illiteracy, social and cultural practices are responsible for the prevalence of child marriages in Pakistan. These efforts

**Table 2** Prevalence of ever-married women aged 20–24 years who were married as adults or children by different characteristics including social equity indicators, Pakistan Demographic and Health Survey, 2006–2007

| | Child marriage (N = 782) | | Adult marriage (N = 778) | | p value |
|---|---|---|---|---|---|
| | N | Weighted % | N | Weighted % | |
| Age of women | | | | | <0.001 |
| 20 | 215 | 61.9 | 143 | 38.1 | |
| 21 | 124 | 53.4 | 108 | 46.6 | |
| 22 | 170 | 47.9 | 183 | 52.1 | |
| 23 | 110 | 39.9 | 160 | 60.1 | |
| 24 | 163 | 46.0 | 184 | 54.0 | |
| Highest level of education | | | | | <0.001 |
| No education | 538 | 59.8 | 378 | 40.2 | |
| Primary | 134 | 48.2 | 135 | 51.8 | |
| Secondary | 99 | 33.3 | 178 | 66.8 | |
| Higher | 11 | 11.0 | 87 | 89.0 | |
| Area of region | | | | | <0.001 |
| Punjab | 254 | 44.8 | 337 | 55.2 | |
| Sindh | 284 | 57.8 | 206 | 42.2 | |
| North Western Frontier Province | 168 | 56.4 | 143 | 43.6 | |
| Balochistan | 76 | 45.4 | 92 | 54.6 | |
| Type of place of residence | | | | | <0.001 |
| Urban | 221 | 40.9 | 313 | 59.1 | |
| Rural | 561 | 54.0 | 465 | 46.0 | |
| Wealth index | | | | | <0.001 |
| Poorest | 211 | 69.1 | 102 | 30.9 | |
| Poorer | 203 | 57.9 | 159 | 42.1 | |
| Middle | 156 | 51.6 | 147 | 48.4 | |
| Richer | 131 | 42.7 | 171 | 57.3 | |
| Richest | 81 | 26.3 | 199 | 73.7 | |
| Ethnicity | | | | | <0.001 |
| Urdu | 22 | 21.8 | 73 | 78.2 | |
| Punjabi | 147 | 39.0 | 249 | 61.0 | |
| Sindhi | 160 | 60.8 | 111 | 39.2 | |
| Pushto | 180 | 58.5 | 146 | 41.5 | |
| Balochi | 53 | 61.4 | 33 | 38.6 | |
| Siraiki | 137 | 61.1 | 104 | 38.9 | |
| Other | 83 | 59.5 | 62 | 40.5 | |
| Contraception use (ever) | | | | | 0.036 |
| No | 524 | 48.1 | 583 | 51.9 | |
| Yes | 258 | 54.9 | 195 | 45.1 | |
| Duration of marriage (years) | | | | | <0.001 |
| 0–4 | 213 | 24.3 | 699 | 75.7 | |
| 5–9 | 511 | 86.0 | 79 | 14.0 | |
| 10–14 | 58 | 100.0 | 0 | 0 | |
| Husband's desire for more children | | | | | 0.001 |
| No | 398 | 47.0 | 456 | 53.0 | |
| Yes | 187 | 59.4 | 119 | 40.6 | |
| Son preference | | | | | 0.254 |
| No | 493 | 49.0 | 521 | 51.0 | |
| Yes | 288 | 52.4 | 255 | 47.6 | |

Data are weighted % of participants in each subsample while numbers are absolute participants

Absolute number of participants does not perfectly correspond to percentages because the percentages are weighted

**Table 3** Associations between ever-married women aged 20–24 years who were married as children and fertility outcomes, Pakistan Demographic and Health Survey, 2006–2007

| Indicators | Overall<br><br>N (weighted %) | Child marriage (N = 782)<br>N (weighted %) | Adult marriage (N = 778)<br>N (weighted %) | ORs (95 % CI) | Adjusted ORs (95 % CI)[a] | Adjusted ORs (95 % CI)[a] including adjustment for husband's desire for more children and son preference |
|---|---|---|---|---|---|---|
| Childbirth in first year of marriage | | | | 0.60 (0.46–0.78) | 0.62 (0.47–0.83)[b] | 0.56 (0.41–0.77)[b] |
| No | 811 (68.4) | 521 (72.9) | 290 (61.8) | | | |
| Yes | 354 (31.6) | 183 (27.1) | 171 (38.2) | | | |
| At least one childbirth | | | | 5.52 (4.03–7.57) | 5.16 (3.35–7.93) | 4.97 (2.95–8.35) |
| No | 395 (25.1) | 78 (10.6) | 317 (39.7) | | | |
| Yes | 1,165 (74.9) | 704 (89.4) | 461 (60.3) | | | |
| Three or more childbirths | | | | 13.49 (8.74–20.82) | 6.44 (3.34–12.41) | 6.62 (3.53–12.43) |
| No | 1,259 (80.1) | 508 (64.2) | 751 (96) | | | |
| Yes | 301 (19.9) | 274 (35.8) | 27 (4) | | | |
| Repeat childbirth in less than 24 months | | | | 4.48 (3.40–5.91) | 2.97 (1.95–4.52) | 2.88 (1.83–4.54) |
| No | 1,128 (71.4) | 462 (57.1) | 666 (85.7) | | | |
| Yes | 432 (28.6) | 320 (42.9) | 112 (14.3) | | | |
| At least one unwanted pregnancy | | | | 2.08 (1.46–2.97) | 2.80 (1.68–4.66) | 2.90 (1.75–4.79) |
| No | 945 (82.7) | 539 (78.7) | 406 (88.5) | | | |
| Yes | 192 (17.3) | 138 (21.3) | 54 (11.5) | | | |
| At least one pregnancy termination | | | | 1.86 (1.37–2.52) | 1.87 (1.21–2.88) | 1.75 (1.10–2.78) |
| No | 1,290 (82.5) | 610 (78.1) | 680 (86.9) | | | |
| Yes | 267 (17.5) | 172 (21.9) | 95 (13.1) | | | |

Data are weighted % of participants in each subsample while numbers are absolute participants

Absolute number of participants does not perfectly correspond to percentages because the percentages are weighted

All analyses used women married as adults as reference group

*OR* odds ratio, *CI* confidence interval

[a] Analysis adjusted for participant age, level of education, region of residence, area of residence, wealth index, ever used contraception, and marriage duration

[b] Not adjusted for duration of marriage since it has no bearing on the outcome

will eliminate, at least on paper, the discriminatory provisions of age and aligning the legislation with the requirements of CEDAW and the CRC [30]. In contrast, Shariah Law defines puberty/menstruation for girls and facial hair for boys to signify the time when they can get married. But because of lack of awareness and limited knowledge, especially in the rural areas where lack of education prevail, the mandatory condition in Shariah of having mutual consent of both partners in marriage is often overlooked, which is the case most often in child marriages [12]. Moreover, primitive cultural practices, several of which are forbidden by the country's laws are prevalent in rural and tribal areas of Pakistan, such as *Watta Satta* (bartering bride for bride), *Pait Likkhi* (marrying children before they are born or are still very young), *Addo Baddo* (marriage among tribes), and *Swara/Khoon-Baha/Vani/Sakh*

(girls given in marriage as a form of dispute resolution) that further complicate the situation in the country [12]. These cultural practices are deep-rooted in the society and needs significant efforts locally and at governmental level to abolish them, which can directly reduce the high numbers of child marriages in Pakistan.

Rural Sindh is one of the most impoverished in the country [14], which is one of the main reasons for increase in numbers of child marriages in this area. Rural Sindh has shown the highest percentage of early marriages in the country [12], where parents often sell their young girls in exchange of money offered from grooms that commonly ranges from $1,400 to $5,000, with groom usually many fold older than the age of brides [14]. The percentage in Rural Sindh (72 %) is followed by rural Balochistan (63 %) for early marriages

**Table 4** Associations between ever-married women aged 20–24 years who were married as children and fertility outcomes by age groups, Pakistan Demographic and Health Survey, 2006–2007

| Indicators | Yes N (weighted %) | No N (weighted %) | ORs (95 % CI) | Adjusted ORs (95 % CI)[a] | Adjusted ORs (95 % CI)[a] including adjustment for husband's desire for more children and son preference |
|---|---|---|---|---|---|
| Childbirth in first year of marriage (years) | | | | | |
| <14 | 13 (18.2) | 69 (81.8) | 0.36 (0.15–0.83) | 0.41 (0.18–0.92)[b] | 0.21 (0.10–0.44)[b] |
| 14–15 | 73 (26) | 202 (74) | 0.57 (0.40–0.80) | 0.63 (0.44–0.92)[b] | 0.54 (0.36–0.80)[b] |
| 16–17 | 97 (29.9) | 250 (70.1) | 0.69 (0.50–0.95) | 0.67 (0.47–0.94)[b] | 0.66 (0.46–0.96)[b] |
| ≥18 | 171 (38.2) | 290 (61.8) | Reference | Reference[b] | Reference[b] |
| At least one childbirth (years) | | | | | |
| <14 | 82 (96.9) | 4 (3.1) | 20.65(7.18–59.39) | 15.27 (4.10–56.87) | 7.86 (1.98–31.22) |
| 14–15 | 275 (91.3) | 20 (8.7) | 6.87 (3.85–12.26) | 5.99 (2.77–12.95) | 3.88 (1.58–9.52) |
| 16–17 | 347 (86.6) | 54 (13.4) | 4.23 (2.94–6.09) | 5.01 (3.20–7.84) | 5.17 (2.96–9.03) |
| ≥18 | 461 (60.3) | 317 (39.7) | Reference | Reference | Reference |
| Three or more childbirths (years) | | | | | |
| <14 | 57 (70.1) | 29 (29.9) | 56.88 (29.39–110.08) | 47.55 (15.35–147.37) | 59.26 (19.78–177.55) |
| 14–15 | 128 (44.6) | 167 (55.4) | 19.48 (12.06–31.47) | 12.25 (5.48–27.35) | 14.84 (6.60–33.34) |
| 16–17 | 89 (22.9) | 312 (77.1) | 7.19 (4.43–11.65) | 5.97 (2.89–12.31) | 6.02 (3.00–12.09) |
| ≥18 | 27 (4) | 751 (96) | Reference | Reference | Reference |
| Repeat childbirth in less than 24 months (years) | | | | | |
| <14 | 50 (63.9) | 36 (36.1) | 10.55 (6.07–18.32) | 8.29 (3.65–18.83) | 7.74 (3.43–17.44) |
| 14–15 | 136 (47.9) | 159 (52.1) | 5.49 (3.89–7.76) | 4.01 (2.30–6.99) | 3.57 (1.95–6.56) |
| 16–17 | 134 (35.2) | 267 (64.8) | 3.25 (2.35–4.49) | 2.93 (1.90–4.54) | 2.88 (1.80–4.61) |
| ≥18 | 112 (14.3) | 666 (85.7) | Reference | Reference | Reference |
| At least one unwanted pregnancy (years) | | | | | |
| <14 | 16 (20) | 58 (80) | 1.92 (0.98–3.77) | 3.88 (1.28–11.74) | 5.08 (1.74–14.80) |
| 14–15 | 59 (23.4) | 206 (76.6) | 2.35 (1.52–3.63) | 3.74 (1.96–7.13) | 3.85 (1.96–7.55) |
| 16–17 | 63 (20.1) | 275 (79.9) | 1.93 (1.29–2.91) | 2.72 (1.60–4.64) | 2.85 (1.69–4.79) |
| ≥18 | 54 (11.5) | 406 (88.5) | Reference | Reference | Reference |
| At least one pregnancy termination (years) | | | | | |
| <14 | 16 (20.4) | 70 (79.6) | 1.70 (0.89–3.26) | 1.64 (0.64–4.21) | 1.71 (0.71–4.16) |
| 14–15 | 68 (22.5) | 227 (77.5) | 1.93 (1.32–2.82) | 1.86 (1.02–3.40) | 1.54 (0.79–3.03) |
| 16–17 | 88 (21.7) | 313 (78.3) | 1.84 (1.28–2.66) | 1.86 (1.20–2.88) | 1.78 (1.11–2.84) |
| ≥18 | 95 (13.1) | 680 (86.9) | Reference | Reference | Reference |

Data are weighted % of participants in each subsample while numbers are absolute participants

Absolute number of participants does not perfectly correspond to percentages because the percentages are weighted

OR odds ratio, CI confidence interval

[a] Analysis adjusted for participant age, level of education, region of residence, area of residence, wealth index, ever used contraception, and marriage duration
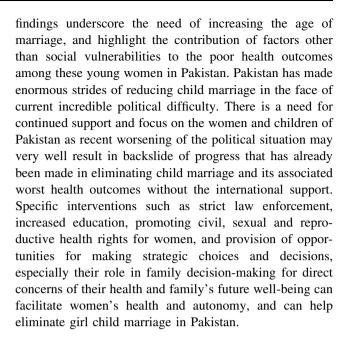
[b] Not adjusted for duration of marriage since it has no bearing on the outcome

however, Punjab province have marriages with most females marrying at later ages in both rural (50 %) and urban (20 %) areas, findings that are consistent with our study [12].

By 2020, the population policy of Pakistan has a target of achieving stabilization in population by annual reduction in population growth rate from 1.9 to 1.3 % and total fertility rate at 2.1 [32]. However, there is only meager progress in achieving this goal with overall contraceptive rate still around 28 % that is quite low as compared to other neighboring countries [33]. Several reasons that limit the use of contraception include women's perception of social unacceptability of contraception use, and conflict with their

husbands' fertility preferences [34]. However, our study indicated the increased risk of high fertility and poor fertility outcomes regardless of the use of contraceptive among these young women married before the age of 18 years. Importantly, in our study some cultural-specific factors such as husbands desire of more children and son preference that have shown to increase the rates of fertility and low use of contraception among women in Pakistan [23–25] seem to have less impact on increased risk of high fertility and poor fertility outcomes among these young women. This enables us to ponder whether there are reasons other than mentioned above that may have direct or indirect effect on increased fertility among these young women in the country. More in-depth research is needed to understand the culture- and behavioral-specific reasons for increase in fertility among these young women in Pakistan. Nonetheless, based on prior literature, women married as children are more likely to be controlled by husbands and in-laws [1, 2, 8], which is also common in Pakistan [19]. Because of dependence and low status, especially in rural areas, women need to seek permission from the head of family to visit health services [35]. This often comes with violence from husbands if women seek health services without men permission thus limiting access to maternal healthcare services among these young women [36]. This may explain the observed high fertility and poor fertility outcomes among this vulnerable group in our study.

There are several limitations which should be seen in context of the overall paucity of information on child marriage in Pakistan. The analyses in the study are cross-sectional so it is not possible to assess the causality. However, temporal precedence of the outcomes can be assumed since child marriage took place before the fertility-related outcomes. These analyses may be subject to recall and social desirability biases as a result of being self-reported. Further, these findings are limited to women aged 20–24 years of Pakistan, and are therefore not generalizable to other age groups in the country. However, same age group of women has been reported and used in other international publications related to child marriage [1, 2, 8, 28]. Exclusion of FANA, FATA and restricted military and protected areas in the survey may have underestimated the overall prevalence of child marriage among ever-married women in the country, however it is unlikely to affect the association analyses.

## Conclusions and Implications

Girl child marriage affects half of all ever-married women aged 20–24 years in Pakistan, and increases their risk for high fertility and poor fertility health indicators including rapid repeat childbirth and pregnancy termination. These findings underscore the need of increasing the age of marriage, and highlight the contribution of factors other than social vulnerabilities to the poor health outcomes among these young women in Pakistan. Pakistan has made enormous strides of reducing child marriage in the face of current incredible political difficulty. There is a need for continued support and focus on the women and children of Pakistan as recent worsening of the political situation may very well result in backslide of progress that has already been made in eliminating child marriage and its associated worst health outcomes without the international support. Specific interventions such as strict law enforcement, increased education, promoting civil, sexual and reproductive health rights for women, and provision of opportunities for making strategic choices and decisions, especially their role in family decision-making for direct concerns of their health and family's future well-being can facilitate women's health and autonomy, and can help eliminate girl child marriage in Pakistan.

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