

# The Relationship between Contraceptive Use and Unintended Pregnancies among Married Women in Thatta District, Pakistan

Sumera Aziz Ali\* (MD), Farina Abrejo (MSc)

Aga Khan University Department of Community Health Sciences, Karachi, Pakistan

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p><b>Background &amp; aim:</b> The rate of unintended pregnancy has decreased from 24% to 16% in the last four to five years in Pakistan. However, this rate stills varies among the women living in the rural and urban areas of Pakistan. The females residing in the rural areas are less likely to have many contraceptive choices and receive no/low-quality family planning services; as a result, they end up with birth control failure and unintended pregnancy. Regarding this, more studies are needed to investigate the association between the unintended pregnancy and contraceptive use, particularly in the rural areas of Pakistan. Therefore, the aim of the present study was to determine the relationship between contraceptive use and unintended pregnancy among the women at reproductive age living in Thatta district, Sindh, Pakistan.</p> <p><b>Methods:</b> This nested case-control study was conducted on the women living in Thatta district during June 2011-July 2012. The pregnant women who did not want more children were considered as cases, and those who intended to have more children were considered as controls. The categorical and continuous variables were analyzed using the Chi-square test and independent t-tests, respectively.</p> <p><b>Results:</b> According o the results of the present study, the use of contraceptive methods was significantly associated with increased risk of unintended pregnancy among the women living in Thatta district [OR: 2.77 (1.46-5.25)]. Moreover, there was 14% increased risk of unintended pregnancy with one year increase in the age of the women [OR: 1.14 (1.10-1.19)]. The age at marriage showed negative association with unintended pregnancy [OR: 0.92 (0.87-0.97)]. The women having at least one son (alive) were almost three times more likely to report their recent pregnancies as unintended, compared to those with no living son [OR: 2.97 (1.82-4.84)]. In addition, the husband's education and their opposition with the use of family planning methods [OR 2.16 (1.06-4.39)] were found to be associated with unintended pregnancy.</p> <p><b>Conclusion:</b> As the findings of the present study indicted, the unintended pregnancy is likely to occur when the women have achieved their desired family size as evidenced by the higher mean age and presence of at least one living son. We recommend to improve the quality of care and family planning services to deal with issues of birth control failure by taking such measures as the provision of emergency contraception and support.</p>
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## Introduction

The world population was estimated to be 7.2 billion in mid-2013. According to the United Nations population estimate, the world population is going to reach to 8.1 billion till 2025. The developing countries are accounting for 97% of this burden, which means that 75-78 million people are annually born in the

developing world. If this ascending trend persists, the population of the developing countries will extend from 5.9 billion (in 2013) to 8.2 billion (in 2050) (1).

Currently, 85% of the young generation at reproductive age are living in the developing countries with 60% inhabiting in Asia (1). About

\* Corresponding author: Sumera Aziz Ali, Aga Khan University, Department of Community Health Sciences, Karachi, Pakistan. Tel: +92 21 3486 4837; Email: sumera.ali@aku.edu

36 million youth (age group: 15-24 years) were living in Pakistan in 2009, which constituted 45% of the total population in that year. According to the Pakistan Demographic and Health Survey (PDHS), half of the total population of women falls into the reproductive age group (15-49 years). The evidence shows a strong correlation between the fertility and proportion of the reproductive age group.

However, in the last few years, the fertility rate has declined slowly. Pakistan has higher total fertility rate (3.8 children per woman) than many other South Asian countries including India and Bangladesh (2.58 and 2.0 children per woman, respectively) (2, 3). Such factors as education, economic status, availability of family planning (FP) methods, unintended pregnancies, and unmet needs of family planning affect the fertility level of any country (2). Approximately one-third of the pregnancies are unintended in the South and South-East Asia. As reported in the literature, 82% of the unintended pregnancies are due to the lack of modern contraceptives in the developing world (3).

The unintended pregnancy is referred to those pregnancies, which are either unwanted (i.e. occurs when no more children are desired) or mistimed (occurs earlier than desired) (2). The recent PDHS has shown that 9% and 7% of the births were mistimed and unwanted in the previous five years in Pakistan, respectively (2). Multiple reasons can be attributed to unintended pregnancies; however, the unmet needs of family planning is one of the major causes in this regard (2). Moreover, the rate of contraceptive use significantly varies across the world (4). In the developed countries, more than 80% of the females of reproductive age use contraceptives (3).

However, there is a high rate of contraceptive use in Asia (67%). This high rate is mostly due to such countries as China, Iran, Sri Lanka, Japan, India, Bhutan, and Indonesia with contraceptive prevalence rates of 85%, 79%, 68%, 54%, 54%, 66 %, and 61%, respectively. On the other hand, some countries, including Pakistan (35%), Afghanistan (23%), Maldives (35%), and Nepal (48%), have reported low prevalence in this regard (5-7). Nonetheless, there is a significant association between the unintended pregnancy and contraceptive use (modern and traditional

methods) (7).

The major reason for unintended pregnancy is the discontinuation of contraceptive use, which is side effects, poor quality of family planning services, and unavailability of alternative/preferred contraceptive methods (8). The traditional contraceptive methods are more prone to failure than the modern ones (9, 10). According to a study conducted by the Population Council, Pakistan has one of the highest contraceptive failure rates (9%) as compared to other developing countries, such as Bangladesh (5%) and Kenya (6%). Despite the reduction of unintended pregnancies in the last four to five years (from 24% to 16%), the country still has a high rate in this

regard (2, 11).

The rate of unintended pregnancy is different between the rural and urban women. The females living in the rural areas are less likely to have many choices of contraceptives; furthermore, they receive low-quality/no services for post-abortion care. Regarding this, more studies are needed to understand the relationship between the unintended pregnancy and contraceptive use, particularly in Pakistan setting. With this background in mind, this study aimed to determine the relationship between unintended pregnancy and contraceptive use among the women of reproductive age living in Thatta district, Sindh, Pakistan. This study would contribute to improve the birth control policies through providing evidence from a less developed area.

## Materials and Methods

The community-based case-control study nested within the Maternal and Newborn Health Registry of the Global Network for Women's and Children's Health Research (12). This study aimed to investigate the association between geographic access to working family planning centers and unintended pregnancy by performing a network analysis through geographic information system during June 2011-July 2012 in Thatta district of Sindh province (13). Sindh province has an estimated population of 55 million (57.5% and 42.5% of which living in urban and rural areas, respectively).

This district is one of the rural areas of Sindh with the estimated population of 1,513,194 (i.e.,

7, 89341 and 7, 23853 males and females, respectively) (14). The total fertility rate and contraceptive prevalence rate of Thatta district are 5.2/1000 and 21.6%, respectively. Furthermore, 46% of the population of this district living below the poverty line (14). It has high maternal and neonatal mortality rates with more than 500 deliveries per year (15).

The married women living with their husbands in 14 union councils of the district with gestational age of at most 12 weeks were included in the study. On the other hand, those females, who were not living with their husbands, migrated out of the catchment areas, or were identified to have false pregnancy were excluded from the study. All pregnant women with children, who wanted to space their pregnancy, but became unexpectedly pregnant (without planning) were considered as research cases. On the other hand, the controls were those pregnant women reporting their current pregnancy as intended.

The intention of the current pregnancy was investigated during the enrollment of the participants in the Maternal and Newborn Health Registry by using series of validated questions, such as "when you became pregnant, did you want to become pregnant (planned)? Did you want to have a baby later (mistimed) or did you not want to become pregnant at all?" (2). The exposure was considered as the use of modern contraceptive methods before current pregnancy by the women of Thatta district. The proportion of exposure or other risk factors for unintended pregnancy among the controls was 10-70% (2, 16).

In order to detect an odds ratio of at least 2, with a power of 80%, significance level of 5%, and the ratio of 1:3 between the cases and controls, at least 800 study participants were required to conduct this study. The trained interviewers approached the eligible participants through identifying their home addresses from the existing birth registry. After obtaining the written consent, the data related to socio-demographic and socio-economic status, fertility, and contraceptive and access related factors were collected.

The data regarding the contraceptive knowledge, home visits, and provision of family planning services by lady health workers

(LHWs) were collected through a pretested and structured questionnaire, designed by using the series of validated questions derived from the PDHS (2007) and literature review. The questions were asked in the local language; furthermore, the confidentiality and privacy of the participants were maintained. The study was approved by the Ethics Review Committee of the Aga Khan University, Karachi, Pakistan.

The data were double entered in Epi info and analyzed through the SPSS version 19. To perform a comparative analysis between the cases and controls, the Chi-square test and independent t-test were employed for the categorical and continuous variables, respectively. Additionally, the logistic regression was performed to assess the univariate associations with risk factors, which were characterized by odds ratios and associated 95% confidence intervals.

Multicollinearity was assessed, and the biological plausible interactions between the independent variables were checked. Those variables having biological and significant associations ( $P < 0.25$ ) with the outcome (i.e., unintended pregnancy) were further assessed in the multivariate regression analysis. The variables were included in the final model by assessing their significance at p-value of less than 0.05 and likelihood ratio testing. The scale of such continuous variables as the age, FP center distance, and number of living sons were checked for the assumption of linearity by quartile analysis. The fit of the final model was tested using the Hosmer-Lemeshow test (17). The adjusted odds ratios with 95% confidence intervals were used for interpreting the results.

## Results

We interviewed a total of 200 cases and 600 controls. The mean age was significantly higher in the cases ( $29.66 \pm 4.80$  years) than that in the controls ( $25.50 \pm 4.89$  years). Among the cases, the females had more primary or lower education (90%) than their husbands (65.5%) as compared to the controls (82.3% and 60% respectively). There was also a significant difference between the cases (19.5 years) and controls (20.1 years) with respect to the age at marriage.

The cases were found to have high gravidity

and more sons. In addition, they were found to have higher knowledge about the contraceptive methods (28%), compared to the controls (14.7%). Furthermore, the husband's (20%) and women's (7%) oppositions against the usage of contraceptive methods were found to be significantly higher among the cases than the controls. The fear of side effects was also higher among the cases (27.5%) than the controls (6.8%).

Univariate analysis showed that the increasing age of women [OR: 1.18 (95% CI: 1.14-1.22)], primary education of women [OR: 2.09 (95% CI: 0.97-4.52)] and husband [OR: 1.78 (95% CI: 1.09-2.91)], increasing gravidity [OR: 1.43 (95% CI: 1.34-1.52)], number of living children [OR: 1.72 (95% CI: 1.58-1.89)], having at least one living son [OR: 2.15 (95% CI: 1.78-2.48)], knowledge along with the current use of contraceptive method [OR: 5.26 (95% CI: 2.94-9.41)], knowledge without contraceptive use [OR: 2.91 (95% CI: 1.17-4.88)], husband's opposition [OR: 2.89 (95% CI: 1.45-5.75)], fear of side effects [OR: 5.17 (95% CI: 3.32-8.06)], and door to door visit by LHW [OR: 1.35 (95% CI: 0.94-1.94)] were positively associated with

the risk of unintended pregnancy.

On the other hand, the age at the time of marriage [OR: 0.95 (95% CI: 0.90-0.99)] was found to be protective as shown in Table 1. Furthermore, both cases and controls were almost equally aware of the LHWs (81% and 79.3%, respectively). LHWs' door step visits were slightly higher in the cases (74.5%) than that in the controls (68.3%). Likewise, higher proportion of cases had discussion with LHW about the FP (30.5%) as compared to the controls (16.7%). Service utilization was also higher among the cases than the controls, i.e., 11% of the cases utilized the FP methods provided by the LHW against 6% of the controls using these methods.

In addition, higher proportions of cases had knowledge about the family planning centers (62%) and visited these centers more frequently (18%), compared to the controls (43.5% and 11.5%, respectively). As presented in Table 2, the use of contraceptive methods was significantly associated with high risk of unintended pregnancies [OR: 2.77 (1.46-5.25)]. Furthermore, increased age of the women was the positive predictor of unintended

**Table 1.** Univariate logistic regression of association of knowledge and use of contraceptives and other covariates with unintended pregnancy among the participants

<b>Socio-demographic characteristics of the participants</b>			
<b>Age</b>	29.66±4.80*	25.50±4.89*	1.18 (1.14-1.22)***
<b>Female education</b>			
Intermediate and above	180(90%)	494(82.3%)	1
Middle to secondary	12(6%)	60(10%)	1.15 (0.42-3.04)
Primary or lower	8(4%)	46(7.7%)	2.09 (0.97-4.52)***
<b>Husband's education</b>			
Intermediate and above	133(66.5%)	360(60%)	1
Middle to secondary	44(22%)	129(21.5%)	1.65(0.94-2.90)
Primary or lower	23(11.5%)	111(18.5%)	1.78(1.09-2.91)**
<b>Women's autonomy</b>			
Yes	163(81.5%)	438(73%)	1
No	37(18.5%)	162 (27%)	0.61(0.41-0.91)***
<b>Socio-economic score</b>	11.5(9,14)†	12(9.25,16)†	0.97 (0.94-1.00)**
<b>Religion</b>			
Non-Muslim	6(3%)	21(3.5%)	1
Muslim	194(97%)	579(96.5%)	1.17 (0.47-2.95)
<b>Fertility related factors</b>			
<b>Age at marriage</b>	19.48±3.44*	20.06±3.33*	0.95 (0.90-0.99)***
<b>Gravidity</b>	5 (4,8) †	2 (1,4) †	1.43 (1.34-1.52)***
<b>Number of living children</b>	4 (3,6) †	1 (0,3) †	1.72 (1.58-1.89)***
<b>Number of living sons</b>			
No living son	26(13%)	300(50%)	1
At least one living son	174(87%)	300(50%)	2.15 (1.87-2.48)***

<b>Knowledge and family planning service utilization</b>			
<b>Distance of family planning center from the house of the participants</b>	0.81 (0.32,4.61) <sup>†</sup>	0.81 (0.33,4.41) <sup>†</sup>	0.99 (0.96-1.03)
<b>Awareness of family planning centers</b>			
Yes	124(62%)	272(45.3%)	1
No	76 (38%)	328(54.7%)	0.51 (0.37-0.70) ***
<b>Visited family planning centers for availing services</b>			
Yes	36(18%)	69(11.5%)	1
No	164(72%)	531(88.5%)	0.59 (0.38-0.92) ***
<b>Knowledge and current use of any family planning method</b>			
No knowledge about any family planning methods	19(9.5%)	157(26.2%)	1
Knowledge with current use	56(28%)	88(14.7%)	5.26 (2.94-9.41) ***
Knowledge without current use	125(62.5%)	355(59.2%)	2.91 (1.17-4.88) ***
<b>Husband's opposition for using contraceptives</b>			
No	160(80%)	561(93.5%)	1
Yes	40(20%)	39(6.5%)	2.89 (1.45-5.75) ***
<b>Respondent's opposition</b>			
No	186(93%)	577(96.2%)	1
Yes	14(7%)	23(3.8%)	1.18 (0.92-3.56) **
<b>Fear of side effects or difficulty in using contraceptives</b>			
No	245(72.5%)	559(93.2%)	1
Yes	55(27.5%)	41(6.8%)	5.17 (3.32-8.06) ***

\*Mean±SD, †Median (interquartile range), \*\* P-value < 0.25, \*\*\* P-value < 0.05, OR: Ods ratio, CI: Confidence interval

pregnancy; accordingly, there was 14% increased risk of unintended pregnancy with one year increase in the age of women [OR: 1.14 (1.10-1.19)].

On the other hand, the age at marriage showed negative association with unintended pregnancy [OR: 0.92 (0.87-0.97)]. The risk of unintended pregnancy also elevated with

increasing number of living sons. The women having at least one son (alive) were three times more likely to report their recent pregnancy as unintended than those with no son [OR: 2.97 (1.82-4.84)]. Husband's education and their opposition [OR: 2.16 (1.06-4.39)] to family planning methods were also associated with unintended pregnancy.

**Table 2.** Multivariate logistic regression model

<b>Characteristics</b>	<b>Adjusted OR (95% CI)</b>	<b>P-value</b>
<b>Maternal age</b>	1.14 (1.10-1.19)	<0.001
<b>Age at marriage</b>	0.92 (0.87-0.97)	<0.01
<b>Husband's education</b>		
Intermediate or more	1	
Secondary	1.58 (0.84-2.94)	0.153
Primary or lower	1.72 (1.004-2.95)	<0.05
<b>Husband's opposition</b>		
No	1	
Yes	2.16 (1.06-4.39)	<0.05
<b>Number of living sons</b>		
No living son	1	
At least one living son	2.97 (1.82-4.84)	<0.001
<b>Knowledge and current use of any family planning methods</b>		
No knowledge about any family planning methods	1	
Knowledge with current use	2.77 (1.46-5.25)	<0.01
Knowledge without current use	1.87 (1.05-3.31)	<0.01

OR: Odds ratio, CI: Confidence interval



## Discussion

The findings of the present study suggested that the knowledge of contraceptive methods was significantly associated with increased risk of unintended pregnancy among the women living in Thatta district. The females using an FP method were more likely to report their current pregnancy as unintended. These findings are in line with the results of the studies carried out around the world (18, 19). This is striking because in a setting with low contraceptive prevalence rate (21.6%), non-use of modern FP methods would be expected to account for the majority of the unintended pregnancies; however, almost one-third of the unintended pregnancies were due to contraceptive failure rather than non-use.

Moreover, the most frequently used method of contraception was injections (47.9%), condoms (28.5%), and birth control pills (27.1%). On the other hand, such long-acting reversible contraception methods as the hormonal implants (1.4%) and IUD (3.5%) were rarely used. Whereas condoms and pills are prone to typical use failure due to incorrect usage, the long-term contraceptive methods are much less likely to fail in this regard (10, 20).

As reported in the literature, these failures were due to missed pills or doses of injection, ruptured condoms, and supply chain issues (21). This raises questions about the care quality. Therefore, the quality of FP services, especially the effective and long-acting reversible FP methods should be improved. Furthermore, supports should be provided in terms of the emergency contraception in case of unprotected sex or contraceptive failure.

The factors contributing to discontinuation of contraceptive use are inappropriate treatment, incomplete follow-up, and limited choice of these methods. Therefore, the respective services should prioritize the issue of improving women's ability to achieve their desired reproductive goals.

The findings of the present study were consistent with those reported in the literature. In the present study, the women with primary or lower education did not tend to have more children than those having no education at all. This findings was also reported in another study, which demonstrated that the women without primary education had high rate of

unintended pregnancy, compared to those who had completed the primary education (22).

There are multiple studies investigating the burden and causes of unintended pregnancy in other parts of the world, particularly in the developing countries. For instance, in a study, which examined the unintended pregnancy and household characteristics in Nigeria, it was demonstrated that the less educated women had higher rate of unintended pregnancy, compared to those with higher education (23).

In this study, women age was identified as an important risk factor for unintended pregnancy, indicating that the risk of conceiving unintended pregnancy was higher among the women with older age. Moreover, older females mostly achieve their fertility choices; however, due to unmet need for contraceptives, these women experience unintended pregnancies. Regarding this, targeting this population subgroup with expanded programs can result in substantial and rapid decline in the occurrence of unintended pregnancy. Evidence from other studies on age as a risk factor for unintended pregnancy is consistent with our finding in this regard (18, 24).

This study revealed that the women whose husband opposed to use contraceptives before the current pregnancy were more likely to have unintended pregnancy. According to the literature, there should be a mutual decision for having another child among the married couples. However, due to the lack of communication between the couples in Pakistan, this vital decision is neglected. Similarly, the literature has shown the importance of inter-spousal communication in adopting any contraceptive method and identified it as a good predictor for contraceptive use (25).

The most important strength of this study was that the assessment of pregnancy intention was performed prospectively rather than retrospectively like the previous studies. In retrospective data collection, the females may have tendency to rationalize an unwanted pregnancy as a wanted birth, which can lead to severe misclassification bias. Furthermore, in order to minimize the underreporting of unintended pregnancy and reduce the recall bias, the intention of the pregnancy was investigated during the first trimester, and the

last pregnancy was focused.

In addition, our research instrument was a questionnaire, which was based on the standard demographic definition of unintended pregnancy, whose reliability and validity were confirmed. The findings of this study can be generalized since the chosen district is depicting the similar socio-economic status and cultural picture of other rural parts of Pakistan.

The main limitation of the current study was that it was a secondary data analysis. Although the privacy and confidentiality of the females were assured to obtain proper responses, there is possibility of not receiving appropriate responses in terms of the knowledge and use of contraceptives due to sensitive nature of these questions. Therefore, the response or reporting bias might have occurred in this regard.

The preferences or intentions for fertility were elicited only from the women rather than incorporating the fertility preferences of both parents. In addition, the mistimed and unwanted pregnancies were not analyzed separately. Consequently, further studies should be conducted to evaluate this issue more thoroughly in order to have more meaningful results.

## Conclusion

Our study suggested that the unintended pregnancy is likely to occur when women have achieved their desired family size as evidenced by the higher average age and the presence of at least one living son. Despite several local and international efforts in providing quality family planning services, unintended pregnancies are still the matter of concern in South Asia. Pakistan has made several international commitments to provide quality reproductive healthcare centers; nevertheless, it is still lagging behind in achieving its set goals in this regard as it has low contraceptive use rates and high fertility rate as compared to other South Asian countries. The country has adopted many strategies to fulfill the demands of family planning services.

This study was an attempt to investigate the burden of unintended pregnancy among the rural population such as Thatta. Furthermore, such social factors as female education, education of husband, age at marriage, preference to have sons/more sons, which are associated with unintended pregnancy are quite similar and

generalized in Pakistani society. In contrast, the factors related to FP service utilization, such as availability of contraceptives, current use of FP methods, fear of side effects, and husband's opposition might be different in other parts of the country.

It is important to understand the culture and improve the quality of family planning counseling by promoting birth spacing and providing a support system for failure in this regard. Accordingly, the enhancement of the choices and availability of contraceptives for people living in rural areas would be helpful. It is also essential to focus on increasing the knowledge of the husbands and educating them to reduce their opposition against the FP methods. The burden of unwanted or mistimed pregnancies can be reduced by prioritizing the issue at policy level. Evidence-based policy is one of the answers to address this issue at national level. To this aim, more studies should be conducted to support this argument and administer it at the future programs and projects of the country.

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