January 2017

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Unintended Pregnancies among Married Women in Sindh Pakistan: Role of Lady Health Workers

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Received: November 10, 2017; **Published:** December 07, 2017

Abstract

Background: Unintended pregnancies, which pose substantial risks to both mothers and children, account for 24% of all pregnancies in Pakistan. Door to door visits and service provision by lady health workers (LHWs) may be related to the reduction of such pregnancies, particularly in rural areas. This study aimed to determine the association of knowledge about Lady Health Visitors (LHWs) and door to door visits by LHWs with unintended pregnancies among rural women.

Methods: We conducted a community-based, nested case-control study of 800 pregnant women, identified from the database of an active surveillance mechanism, which registers and follows all pregnant women in the catchment area. Women who were enrolled during the first trimester and reported their pregnancy to be unintended were selected as cases from the database (n=200). Women whose pregnancies were intended served as controls (n=600). Logistic regression was used for analysis.

Results: Knowledge about LHWs and door to door visits by LHWs had no significant association with unintended pregnancies OR=1.11(95%CI: 0.74-1.66) and OR=1.03 (95%CI: 0.67-1.58) respectively. Other factors associated with unintended pregnancy were higher knowledge and use of family planning, maternal age, having at least one son, spousal opposition to family planning and limited spousal education.

Conclusion: Results suggest that Family planning strategies need to target old aged women and address the role of men in addition to improving coverage and quality of Family planning services.

Significance

What is already known on this subject?

It is known that Unintended pregnancy is associated with socio-demographic and fertility related factors like maternal age, education, socioeconomic status, religion, place of residence, parity, number of alive sons, age at time of marriage and knowledge of family planning methods. However, little evidence is available on the association between unintended pregnancy and access related factors particularly door to door visits by health care workers.

What this paper adds?

We studied association of unintended pregnancies with knowledge about lady health workers and door to door visit by lady health workers in one of the rural districts of Pakistan.

Keywords: *Contraception; Pregnancy intention; Public Health; Lady Health Workers*

Introduction

Unintended pregnancies have substantial, social, economic and health consequences [1]. Women with unintended pregnancies undergo unsafe abortions, do not seek appropriate antenatal care and have poor pregnancy outcomes than women with intended pregnancies [2-4]. Globally around 210 million women become pregnant every year [5,6]. Out of these, 75 to 80 million pregnancies are unintended and 42 to 46 million are terminated [5-7].

About one-third pregnancies in South Asia are reported to be unintended. The proportion of unintended pregnancies is 30% in Bangladesh, 21% in India and 35% in both Iran [8] and Nepal [5]. In Pakistan, out of about 9 million pregnancies, 46% are believed to be unintended and 54% of these end in induced abortions [9]. It has been estimated that current total fertility rate of Pakistan is 4.1 births per woman can be reduced to 3.1, if unwanted pregnancies are prevented [2].

Women who experience unintended pregnancies either have an unmet need for contraception [10] or experience a failure of the contraceptive method they are using [11]. It is estimated that 52 to 54 million unintended pregnancies can be prevented annually by

addressing unmet need in developing countries [12]. In Pakistan, 55% of married women do not want to become pregnant at any given time, but only 26% use a modern contraceptive method, leaving 29% with an unmet contraceptive need.

Lack of access to FP services is considered as an important factor contributing to unmet need and unintended pregnancies [2,13-15]. Access has been measured in a variety of ways, including distance or travel time to family planning outlets, knowledge of a source of contraceptives, the number of family planning personnel serving a population and door to door visits by health workers [16].

The role of community health workers has now been well established for improving the accessibility of health services especially in low resource settings [17]. Pakistan National Program for Family Planning and Primary Health Care, more commonly known as the Lady Health Worker (LHW) program, is amongst the more successful community health worker programs [18]. It consists of over 110,000 female local-resident workers providing a range of door-step family planning, antenatal and child health services [19]. Their family planning responsibilities include motivating couples to use modern contraceptives, providing pills and condoms and women interested in injections, intra-uterine contraceptive devices or sterilization are referred [19].

LHWs have important role in raising the awareness about the family planning and use of these services. It is however yet to be determined that knowledge about the LHWs and door to door visit by LHWs is related to the occurrence of unintended pregnancies. We therefore aimed to assess the association of unintended pregnancies with knowledge of women about the LHWs and door to door visit of LHWs to the houses of women.

Methods

We conducted a community-based case-control study nested within the Global Network (GN) for Women's and Children's Health Research's Maternal and Newborn Health Registry [20]. This study was the part of principal study, which assessed the association of geographic access to working family planning centers and unintended pregnancy by doing network analysis through geographic information system from June 2011 to July 2012 in Thatta, a rural district of Sindh province Pakistan (Ali, 2016 #126).

All pregnant women who already had children and did not want more or they wanted another child later but their pregnancy occurred sooner than they had planned were considered as cases. The controls were pregnant women, reported their current pregnancy as intended.

The pregnancy intention was assessed during the enrollment of participants in MNH registry by using validated series of questions like, "at the time 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 (unwanted)? [2,21].

The proportion of exposure and other risk factors of unintended pregnancy among controls was 10% - 70% [2,22]. In order to detect an odds ratio of at least 2, with a power of 80%, significance level of 5% and with the ratio of 1:3 between cases and controls, at least 800 study participants were required to conduct this study.

Trained interviewers approached eligible participants by identifying home addresses from registry. After taking the written informed consent, data about socio-demographic, socio-economic, fertility related factors, contraceptive and access related factors was collected from women. Questions regarding knowledge, door step visits and FP services provision by LHWs were asked from the women by using pretested and structured questionnaire, designed by using the validated series of questions from PDHS 2007 and literature review. Questions were asked in the local language by maintaining the privacy and confidentiality of the participants. This study was reviewed and approved by Ethical Review Committee of the Aga Khan University Karachi, Pakistan.

Data was double entered in Epi info and analyzed with IBM SPSS version 19. Chi-square or Fisher exact test and independent t test or Mann Whitney U test were applied for comparative analysis between cases and controls for categorical and continuous variables respectively.

Logistic regression was done to assess the univariate associations with risk factors, which were characterized by odds ratios (ORs) and associated 95% confidence intervals (95% CIs).

Multicollinearity was assessed and checks were made for biological plausible interactions between independent variables. Variables having biological and significant associations (p-value < 0.25) with the outcome (unintended pregnancy) were assessed further in multivariate regression analysis. Variables were included in final model by assessing their significance at p-value of less than 0.05 and likelihood ratio testing. The scale of the continuous variables such as age, road network distance and number of living sons were checked for assumption of linearity by quartile analysis. The fit of the final model was tested by Hosmer - Lemeshow test [23]. Adjusted odds ratios with their 95% confidence intervals were used for interpreting the results.

Results

A total of 200 cases and 600 controls completed the interview. Table 1 is showing comparison of cases and controls with respect to socio-demographics, fertility and access to family planning services and knowledge and visits by LHWs. Cases had significantly higher age than controls. Education status of cases was found to be better than controls. There was significant difference with respect to age at marriage between the cases 19.5 years and controls 20.1 years. Cases were found to have high gravidity, number of alive children and sons. However no significant differences were observed in distance of family planning services and availability of personal transport.

There was no statistically significant difference in the awareness about the LHWs among cases and controls 81% and 79.3% respectively. Slightly higher proportion of the cases was visited by LHW 74.5% than controls 68.3%. Service utilization was higher among the cases as about 11% of the cases utilized FP methods provided by LHW against 6% of the controls using FP methods provided by LHWs.

Significantly higher proportions of the cases had knowledge about the family planning center and visited these center 62% and 18% compared to controls 45.3% and 11.5% respectively. More of the cases were found to have knowledge with current use of FP methods 28% versus 14.7% of the controls.

Univariate analysis showed that increasing age of women, husbands education, gravidity, number of alive children, at least one alive son, knowledge with and without use of FP, opposition to use FP, fear of side effects and age at marriage were significantly associated with unintended pregnancies. On the other hand education of women, and door to door visits by LHWs had no significant association (Table 1).

Characteristic	Cases	Controls	Unadjusted ORs
Socio-demographics			
Age	29.66 ± 4.80*	25.50 ± 4.89 *	1.18 (1.14-1.22)***
Women's education			
Intermediate and above	180 (90%)	494 (82.3%)	1
Middle to secondary	12 (6%)	60 (10%)	1.15 (0.42-3.04)
Primary or less	8 (4%)	46 (7.7%)	2.09 (0.97-4.52)
Husband's Education			
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 less	23 (11.5%)	111 (18.5%)	1.78 (1.09-2.91) **
Women autonomy			
Yes	163 (81.5%)	438 (73%)	1
No	37 (18.5%)	162 (27%)	0.61 (0.41-0.91) ***
Socio-economic score	11.5 (9,14) †	12 (9.25,16) †	0.97 (0.94-1.00) **
Religion			
Non-Muslim	6 (3%)	21 (3.5%)	1
Muslim	194 (97%)	579 (96.5%)	1.17 (0.47-2.95)
Fertility and access to FP services			
Age at marriage	19.48 ± 3.44*	20.06 ± 3.33*	0.95 (0.90-0.99) ***
Gravidity	5 (4,8) †	2 (1,4) †	1.43 (1.34-1.52) ***
Number of alive children	4 (3,6) †	1 (0,3) †	1.72 (1.58-1.89) ***
Number of alive sons			
No alive son	26 (13%)	300 (50%)	1
At least one alive son	174 (87%)	300 (50%)	2.15 (1.87-2.48) ***
Distance of FP center from house of women	0.81 (0.32,4.61)†	0.81 (0.33,4.41)†	0.99 (0.96-1.03)
Availability of personal transport			
Yes	69 (34.5%)	215 (35.8%)	1
No	131 (65.5%)	385 (64.2%)	1.06 (0.76-1.48)
Awareness of FP centre			
Yes	124 (62%)	272 (45.3%)	1
No	76 (38%)	528 (54.7%)	0.51 (0.37-0.71) ***
Visited FP centre for availing services			
Yes	36 (18%)	69 (11.5%)	1
No	164 (82%)	531 (88.5%)	0.59 (0.38-0.92) ***
Knowledge and family planning service provision by LHWs			
Awareness about LHWs			
Yes	162 (81%)	476 (79.3%)	1
No	38 (19%)	124 (21.7%)	0.9 (0.60-1.35)
Door step visit by LHWs at least once			
No	51 (25.5%)	190 (31.7%)	1
Yes	149 (74.5%)	410 (68.3%)	1.35 (0.94-1.94) **
Ever discussion about FP with woman by LHW			
Yes	61 (30.5%)	100 (16.7%)	1
No	139 (69.5%)	500 (83.3%)	0.46 (0.31-0.66) ***
FP method offered by LHW			
Yes	31 (15.5%)	46 (7.7%)	1
No	169 (84.5%)	554 (92.3%)	0.45 (0.28-0.74) ***
Woman took FP method from LHWs			
Yes	28 (14%)	44 (7.3%)	1
No	172 (86%)	556 (92.7%)	0.48 (0.29-0.81) ***
Women used the FP method given by LHWs			
Yes	23 (11.5%)	36 (6%)	1
No	177 (88.5%)	564 (94%)	0.49 (0.28-0.85) ***
Women were satisfied with FP method given LHW			
Yes	16 (8%)	25 (4.2%)	1
No	184 (92%)	575 (95.8%)	0.5 (0.26-0.95) ***
Knowledge and family planning service utilization			
Awareness of FP center			
Yes	124 (62%)	272 (45.3%)	1
No	76 (38%)	328 (54.7%)	0.51 (0.37-0.70) ***
Visited FP center for availing services			
Yes	36 (18%)	69 (11.5%)	1
No	164 (72%)	531 (88.5%)	0.59 (0.38-0.92) ***
Knowledge and current use of any FP method			
No knowledge about any family planning method	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) ***
Husband's opposition for using contraceptives			
No	160 (80%)	561 (93.5%)	1
Yes	40 (20%)	39 (6.5%)	2.89 (1.45-5.75) ***
Respondent's opposition			
No	186 (93%)	577 (96.2%)	1
Yes	14 (7%)	23 (3.8%)	1.18 (0.92-3.56) **
Fear of side effects or difficulty in using contraceptives			
No	245 (72.5%)	559 (93.2%)	1
Yes	55 (27.5%)	41 (6.8%)	5.17 (3.32-8.06) ***

Table 1: *Univariate logistic regression for association of knowledge about LHWs and door to door visit by LHWs and other covariates with unintended pregnancy among women of district Thatta, Sindh Pakistan.*

**Mean ± SD (all such values)*

†Median, interquartile range in Parenthesis (all such values)

*** p-value < 0.25*

**** p-value < 0.05*

In the final multivariate model door to door visit by LHW was not found to be a significant predictor of unintended pregnancy OR 1.03 (0.67 - 1.58). Increasing age of the women was a positive predictor of unintended pregnancy and there was 14% increased risk of unintended pregnancy with one year increase in the age of women. On the other hand age at marriage showed negative association with unintended pregnancy OR 0.92 (0.87 - 0.97). Risk of unintended pregnancies also increased with increasing number of alive sons. Those women who had at least one alive son were almost three times likely to report their recent pregnancy as unintended, than those who have no alive son OR 2.97 (1.82 - 4.84). Knowledge of family planning methods with or without use was also associated with increased risk of unintended pregnancies OR 2.74 (1.40 - 5.34) and 1.85 (1.03 - 3.34) respectively (Table 2).

Variable	Adjusted OR (95% CI)	p-value
Maternal age	1.14 (1.10 - 1.19)	< 0.001
Age at marriage	0.92 (0.87 - 0.97)	< 0.01
Husband's education		
Intermediate or more	1	
Secondary	1.58 (0.84 - 2.94)	0.153
Primary or less	1.72 (1.004 - 2.95)	< 0.05
Husband's opposition		
No	1	
Yes	2.15 (1.06 - 4.39)	< 0.05
Number of alive sons		
No Alive son	1	
At least one alive son	2.97 (1.82 - 4.84)	< 0.001
Knowledge and current use of any FP method		
No knowledge about any family planning method	1	
Knowledge with current use	2.74 (1.40 - 5.34)	< 0.05
Knowledge without current use	1.85 (1.03 - 3.34)	< 0.05
Visit by LHWs		
No	1	
Yes	1.03 (0.67 - 1.58)	0.89

Table 2: *Multivariate logistic regression model predicting risk of unintended pregnancy.*

Discussion

This study indicates that knowledge about LHWs and door to door visits by LHWs has no measurable impact on the occurrence of unintended pregnancies in our catchment population.

These findings could be due to the fact that, only 20% of the women in the study had discussion about FP methods with LHWs and 9.6% of the women were offered any FP method by LHWs. Surprisingly only 7.4% of the women had used those FP methods and 5.1% of the women were satisfied with FP methods provided by LHWs (data not shown). Studies looking at the impact of LHWs visits on occurrence of unintended pregnancies are mixed. Our findings are consistent with evidence from Nepal that demonstrates that FP worker visits are not associated with unintended pregnancy [24]. However, a study from Kenya suggests that women who have been visited by FP outreach workers are more likely to use modern contraceptive methods, which may bring down the chance of experiencing unintended pregnancy [25].

This study showed that women with unintended pregnancies were more likely to be older, had married earlier and had more number of living children as compared to controls. Despite the younger age of controls and higher age at time of marriage, this group should not be neglected, as in near future their likelihood of becoming a case will increase if this group will not be counseled for family planning.

Moreover, as a woman gets older; her fertility choices are usually completed but due to unmet need for contraceptives, these women experience unintended pregnancies. Targeting these population subgroups with expanded program efforts 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 this study finding [1,24,26].

Increased age at time of marriage lowers the risk of facing unintended pregnancy. This might be due to the fact that women who have married late are less likely to be influenced by their husband, family and culture with regards to decision on their pregnancy timing and intention. Studies conducted in different regions of Ethiopia documented the similar findings [27,28].

Women with at least one son were more likely to experience unintended pregnancies as compared to the women with no son. Son preference is common in Asian countries particularly in rural areas [26]. It might be possible that a woman after having a single living son wants to give space for subsequent pregnancy or a woman with at least two sons may not want to be pregnant any more. These findings are consistent with previous research [26] and PDHS data also shows that 65% of the women with three sons do not want to be pregnant anymore [2].

Hence it is proposed that older women with more living sons should be targeted for the FP services immediately after giving birth to the baby. Moreover; antenatal care visits provide an opportunity to identify and counsel this group for early postpartum FP services.

One of the important findings of this study is that almost twice as many women who had unintended pregnancies knew about and were using a modern FP methods before index pregnancy (28%) as compared to women with intended pregnancies (14%). Women using a FP method are more likely to regard a pregnancy that occurs as unintended and these findings are coherent with studies around the world [1,29]. This is striking because in a setting with low CPR (21.6%), non-use of modern FP methods would be expected to account for the majority of unintended pregnancies; but almost one-third of women who experience unintended pregnancies did so due to method failure rather than non-use.

Moreover; methods most frequently used by women in this sample were injectable contraceptives (47.9%), condoms (28.5%) and hormonal contraceptive pills (27.1%). Reversible long-term contraceptive methods (hormonal implants (1.4%) and IUCD (3.5%) were rarely used (data not shown). While condoms and pills are prone to failure during typical usage and due to incorrect usage [11]; failure of long-term contraceptive methods is much less likely [9]. Reasons for method failure could not be asked; however, previous studies cite missed pills or doses of injection, ruptured condoms, and supply chain issues [30]. This raises questions about the quality care. Thus, it is proposed that the quality of FP services should be improved with active promotion of effective and long term reversible FP methods and back-up support with emergency contraception in case of unprotected sex or method failure. Moreover; inappropriate treatment, incomplete follow up and limited method choice might lead women to discontinue the methods; therefore quality care of existing services in improving women's ability to achieve their desired reproductive goals should be given an attention.

Women with knowledge but without use of FP method were more likely to experience the unintended pregnancies. Such women could not use methods either due to lack of spousal support, lack of choice of methods by couple or misconceptions about the side effects or difficulty in using methods and the data also shows that 27.5% of the women, who experienced unintended pregnancies, were afraid of side effects or difficulty in using methods.

The women whose husbands opposed for using contraceptives were more likely to face unintended pregnancy. Both male and female are equally responsible to plan their next baby, but the responsibility of men has largely been neglected. Prompting information about men's attitudes, knowledge and use of contraceptives could contribute greatly to understanding of how such pregnancies could be

avoided. Quality of couple's relationship and inter-spousal communication and its effect on contraceptive use has also been supported by previous study [29]. Thus, couples counseling and targeted counseling of men may address some proportion of this barrier. Programs should encourage men to have better communication with their partners to decide equally the reproductive health issues including method of contraception to prevent unintended pregnancies.

The women whose husbands were less educated are more likely to experience unintended pregnancies. This group of less educated men might prefer large family size and might not be aware about contraceptive methods. Therefore less educated husbands should be counseled about the risks of large family size versus the risks due to contraceptive methods.

The important strength of this study was the assessment of pregnancy intention prospectively during first trimester which minimized under reporting of unintended pregnancy and reduced recall and wish biases. Moreover, assessing the intention after first trimester or delivery of baby may help woman to justify unplanned births as planned. Questionnaire based on the standard demographic definition of unintended pregnancy was used whose reliability and validity were confirmed. Cases and controls were selected from same cohort of MNH to overcome selection bias. Data collectors were blinded about the status of pregnancy intention to ensure comparability of information between two groups.

Nonetheless there are certain limitations which should be considered while interpreting results of this study. Women might not have correctly responded about the knowledge and use of contraceptives due to sensitive nature of questions. However; every effort was made to interview women in privacy. Distance was calculated from household to nearest family planning center irrespective of whether the woman was availing services from that center or not. The fertility preferences were elicited only from women without considering preferences of husbands.

Conclusion

Knowledge about LHWs and door to door visits by LHWs do not have any role in reducing the occurrence unintended pregnancies in Thatta district. However users of FP reported their pregnancies as unintended than non-users which indicates poor quality of available FP methods. There is low CPR and there is need to expand the FP services with especial emphasis on women with completed families and target males for education and counseling. The quality care of FP services must be improved including the provision of emergency contraception.

Conflict of Interest

The authors declare that there is no conflict of interest.

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Volume 6 Issue 4 December 2017