Predictors of Modern Contraceptive Usage among Women in Rural Pakistan: Physical Access to Services Stills a Major Barrier

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Abstract

Background: The predictors of contraceptive use may vary in urban and rural areas. Studies have largely focused on the factors predicting contraceptive usage in urban areas. We studied the predictors of contraceptives in one of the rural districts of Pakistan.

Methods: A nested case-control design was used on The Global Network's Maternal Newborn Health Registry (MNHR) in district Thatta Pakistan between June 2011 to July 2012. Pregnant women before their index pregnancy, who did not use (n = 200 cases) and those used any modern contraceptive method (n = 600 controls), were compared. Logistic regression was used to as certain independent factors associated with non-use of modern contraceptives.

Results: Increasing maternal age (AOR = 1.1, 95 % CI = 1.03 - 1.11 per year increase in age), women's educational level (AOR for secondary education = 2.8, 95 % CI = 1.58 - 5.01 and AOR for higher education = 2.0, 95% CI = 1.04 - 3.95), high socioeconomic status (AOR = 1.9, 95 % CI = 1.05 - 3.56) and unintended pregnancy (AOR 1.9, 95 % CI = 1.29 - 3.02) were significantly associated with the utilization of modern contraceptive methods. While distance from the family planning centers was inversely related (AOR = 0.9, 95% CI = 0.87 - 0.98 per kilometers).

Conclusion: Maternal age, women's education, socioeconomic status, the intention of a woman for pregnancy and distance were independent predictors for contraceptive use in district Thatta. Besides addressing known socio-demographic differential, access to family planning services to the women of reproductive age, particularly for younger age, poor and less educated women is essential to improve contraceptive prevalence. Furthermore, intention of pregnancy affect the use of contraceptive which has not been studied previously.

Keywords: Predictors; Modern Contraceptives; Pakistan

Introduction

Globally, nearly 215 million women desire to avoid pregnancy but lack access to contraception [1]. Estimated 54 million unintended pregnancies can be prevented annually by addressing the unmet need for family planning (FP) services in the developing countries [2].

However, modern contraceptive methods have differential usage between urban and rural areas of developing countries. For example, the contraceptive prevalence rate among married women of urban areas was 55.8% in India, 49.8% in Nepal and 17% in Nigeria, while it was 45.3%, 42.1% and 6% in rural areas of respective countries [3,4]. Likewise, the current usage of modern methods was substantially lower in the rural areas (23.1%) as compared to the urban areas (32%) of Pakistan [5].

The rural area makes the most of the population of developing countries where the problem is also acute and poverty is higher [6]. The

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predictors of contraceptive usage operate differently in urban and rural areas. Moreover, the acceptance and knowledge of contraceptive methods and the factors which function at the individual, family and community level vary within the societies [14].

Nonetheless, studies have generally investigated the factors predicting contraceptive usage in urban areas and very few studies have comprehensively studied those predictors in rural areas [7,8]. Thus, little attention has been paid to contraceptive behavior among rural women, where 60% of Pakistani populations reside. Therefore, this study was conducted in one of the rural districts of Pakistan to assess the predictors of contraceptives based on individual, cultural, fertility and access-related factors.

Methodology

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 (MNHR) from June 2011 to June 2012 [9]. The MNHR is a prospective, population-based registry of pregnancies at the Global Network sites: Guatemala, Belgium, India, Pakistan, Kenya, Zambia and Democratic Republic of Congo [9]. The primary purpose of the MNHR is to quantify population based trends in pregnancy outcomes and provides base to conduct research and intervention studies [9]. The MNHR area is divided in geographic units, called clusters, where mothers receive primary peri-natal care from designated healthcare facilities. The clusters usually correspond to existing healthcare service delivery areas in respective countries and have 300 to 500 deliveries per year [9]. The registry enroll pregnant women in the respective catchment areas and follow them till delivery and 6 weeks post-partum.

Since 2008, the department of Community Health Sciences (CHS), Aga Khan University (AKU) has maintained MNHR in 20 clusters of Thatta, a rural district in the southernmost part of Sindh province in Pakistan [10]. Based on the infrastructure, availability of health facilities and markets, the district can be further divided into rural and urban areas. The estimated population of the district was 1513194 in 2008 [11] with a literacy rate of 22.1% [12], total fertility rate of 5.2/1000 and contraceptive prevalence rate of 21.6% [13].

Pregnant women living with their husbands and resident of selected clusters (cluster population 362454) were enrolled before 12 weeks of gestation. Women, who migrated out of catchment areas, had false pregnancy (found in further follow-up) and who did not give the consent were not included.

Pregnant women, who did and did not use any modern contraceptive method before their index pregnancies were considered as controls and cases, respectively. Modern contraceptive methods included usage of pills, condoms, injections, intrauterine devices and tubal ligation. The usage of these modern contraceptive methods was assessed by using series of validated questions from Pakistan Demographic and Health Survey (PDHS) 2007.

The proportion of exposure and other risk factors of unintended pregnancy among controls were expected between 10 to 70%. In order to detect an odds ratio of at least 2, with a power of 80%, significance level of 5%, at least 800 study participants with the ratio of 1:3 between cases and controls, a minimum of 200 cases and 600 controls were required to satisfy the objectives of the study.

The principal study was given approval by Ethical Review Committee (ERC) of the Aga Khan University.

The trained female interviewers took the written informed consent and conducted interview son a structured questionnaire in local language. Privacy was maintained during the interviews. Information regarding socio-economic, demographic factors, fertility, contraceptive and physical access to the family planning centers were obtained. These factors included current age and age at the time of marriage, parity, educational status of the women and her husband, total number of alive sons, socioeconomic status, religion, place of residence including rural and urban areas, women's autonomy, knowledge about contraceptive methods, distance (in kilometers) from the family planning centers and knowledge about the lady health workers (LHWs) (family planning and primary health care program of Pakistan) who provide door-step services in the community. The questions used from PDHS survey to assess the pregnancy intentions were, "At the

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time you became pregnant, did you want to become pregnant? Did you want to have a baby later on, or you did not want to become pregnant at all?"These were recorded as planned, mistimed (wanted the pregnancy to happen later and unwanted (did not want at all) [14]. Socioeconomic status was assessed by ownership of the house, construction of house which was defined as: 'Pucca': houses which were made of concrete, plastered walls and roof, 'Non-Pucca (Katcha) house': part or whole of house was made of clay, wood and reeds, employment status and occupation of both female and male, possession of a television, refrigerator or air conditioner, mobile phones, vehicle and type of vehicle, agricultural land and livestock [15,16]. After getting information, each asset was assigned a score which ranged from 0 to 5 depending upon the type and quality of assets and finally each participant was allocated a final score by summing up all the scores. Two categories of socioeconomic status (rich and poor) based on 50th percentiles were created for analysis.

Statistical Analysis

The data was analyzed with IBM SPSS version 19 and STATA version 11. The Chi-square and independent t-test were used for comparison between cases and controls for categorical and continuous variables, respectively. Logistic regression was done to assess the univariate associations, estimated by odds ratios (ORs) and associated 95% confidence intervals (CIs). Multicollinearity and biologically plausible interactions were assessed between independent variables. Multivariate regression analysis was used for selected variables which had biological plausibility and p-value < 0.25 at the univariate level. Adjusted ORs with their 95% confidence intervals were reported for variables which were significant at p-value < 0.05.

Results

We approached 235 cases and 692 controls. Out of 235 cases, 35 women (14.8%) were excluded due to following reasons: false pregnancies, refusal, and the house could not be located or died (n = 1) after enrollment. Of 692 controls, 92 (13.2%) women were excluded due to following reasons: false pregnancies, refusal, the house could not be located or died (n = 1) after enrollment.

Thus, a total of 200 cases and 600 controls were included in the analysis. The mean age of women who used contraceptives was higher (28.3years) compared to non-users (26.2 years) (p < 0.05). Women who were users of contraceptive were more educated than non-users (secondary education: 27.8% vs 13.1%). While the husbands' of users and non-users of contraceptives had a similar education (secondary education: 38.2% vs 38.4%). Women in urban areas were using more contraceptives than rural areas (64.6% vs 45.6%) of Thatta. Likewise, users were more affluent than non-users (Table 1).

	Non-users of Contraceptives (n = 200)	Users of Contraceptives (n = 600)
Socio- Demographic and fertility related characteristics		
Age of the woman (in years) mean ± SD	26.15 ± 5.18	28.29 ± 4.89
Age at first marriage (in years) mean ± SD	19.88 ± 3.33	20.08 ± 3.54
Total number of pregnancies (mean ±SD)	3.47 ± 2.84	4.71 ± 2.50
Total Number of alive children (mean ±SD)	2.06 ± 2.18	3.35 ± 1.95
Total number of alive sons (mean ±SD)	1.06 ± 1.31	1.62 ± 1.19
Educational Status of woman Intermediate and above Middle to secondary Primary or less	38 (5.8%) 48 (7.3%) 570 (86.9%)	16 (11.1%) 24 (16.7%) 104 (72.2%)

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	n (%)	n (%)
Educational Status of Husband		
Intermediate and above	109 (16.6%)	25 (17.4%)
Middle to secondary	143 (21.8%)	30 (20.8%)
Primary or less	404 (61.6%)	89 (61.8%)
Employment status	201(30.6%)	46 (31.9%)
Employed women	455 (69.4%)	98 (68.1%)
Unemployed women		
Employment status of Husband		
Employed	621 (94.7%)	141 (97.9%)
Unemployed	35 (5.3%)	3 (2.1%)
Place of residence		
Rural	357(54.4%)	51(35.4%)
Urban	299(45.6%)	93(64.6%)
Socio economic status		
Poor	616 (93.9%)	124 (86.1%)
Rich	40 (6.1%)	20 (13.9%)
Religion		
Hindu	19 (2.9%)	8 (5.6%)
Muslim	637 (97.1%)	136 (94.4%)
Woman's autonomy		
Decision by woman and husband	114 (17.4%)	41 (28.5%)
Decision by others	542 (82.6%)	103 (71.5%)
Pregnancy intention		
Unintended pregnancy	144 (22.0%)	56 (38.9%)
Intended pregnancy	512 (78.0%)	88 (61.1%)
Access to Family Planning services		
Distance in kilometers (km) Mean ± SD	3.09 ± 4.09	1.9 ± 3.40
Having own transport		
Yes	240 (36.6%)	44 (30.6%)
No	416 (63.4%)	100 (69.4%)
Knowledge about family planning method		
Yes	480 (73.2%)	144 (100%)
No	176 (26.8%)	0 (0%)
Know About LHWs		
Yes	508(77.4%)	130 (90.3%)
No	148 (22.6%)	14 (9.7%)
Door to door visit by LHWs		
Yes	435 (66.3%)	124 (86.1%)
No	221 (33.7%)	20 (13.9%)
LHW Ever discuss about FP with woman		
Yes	94 (14.3%)	67 (46.5%)
No	562 (85.7%)	77 (53.5%)
FP method offered by LHW		
Yes	27 (4.1%)	50 (34.7%)
No	629 (95.9%)	94 (65.3%)

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Woman took the FP Method from LHWs		
Yes	24 (3.7%)	48 (33.3%)
No	632 (96.3%)	96 (66.7%)
Awareness of FP center		
Yes	279 (42.5%)	117 (81.3%)
No	377(57.5%)	27 (18.8%)
Ever gone to FP center for availing services		
Yes	22 (3.4%)	83 (57.6%)
No	634 (96.6%)	61 (42.4%)

Table 1: *Characteristics of women of reproductive age by contraceptive usage among married women in a rural district of Pakistan.*

More women among user compared to non-users of contraceptive reported intended pregnancy (38.9% vs 22.0%). Furthermore, users of contraceptives had higher gravidity, greater number of living children and sons compared to non-users (Table 1).

Women using contraceptives were, on average, living closer to family planning centers than non-users (1.9 vs 3.09 km). Consequently, women who were user had more knowledge about the existence of FP centers (81.3% vs 57.6%) and visited these centers more (42.5% vs 3.4%) than non-users. Among users of contraceptives more were aware of the lady health worker (LHW) program (90.3% vs 77.4%) and the availability of door-to-door contraceptive service (86.1% and 66.3%) compared to non-users (Table 2).

Characteristics	Unadjusted ORs (95% CIs)
Age	1.08 (1.04-1.12)
Socioeconomic status	
Poor	1
Rich	2.48 (1.40-4.39)*
Women's education	
Primary or less	1
Middle to secondary	2.74(1.61-4.67)
Intermediate and above	2.31(1.24-4.29)
Working status of woman	
No	1
Yes	1.06(0.72-1.57)
Husband's Education	
Primary or less	1
Middle to secondary	0.95(0.61-1.50)
Intermediate and above	1.04(0.64-1.70)
Working status of husband	
No	1
Yes	0.38(0.11-1.24)
Women autonomy	
No	1
Yes	1.89(1.25-2.86)*
Pregnancy intention	
Intended pregnancy	1
Unintended pregnancy	2.26(1.54-3.32)

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Place of residence Rural Urban	1 2.17 (1.49-3.17)
Religion Muslim Hindu	1 1.97 (0.85-4.59)
Fertility and access to FP services	
Age at marriage	1.08(0.96-1.07)
Gravidity	1.15(1.08-1.22)*
Number of alive children	1.27(1.17-1.37)*
Number of alive sons	1.34(1.18-1.52)*
Distance of FP center from house of women (km)	0.91(0.85-0.96)*
Availability of personal transport No Yes	1 0.76(0.52-1.13)
Awareness of FP centre No Yes	1 5.85(3.75-9.15)*
Visited FP center for availing services No Yes	1 39.21(22.88-67.18)*
Awareness about LHWs No Yes	1 2.71(1.51-4.83)*
Door step visit by LHWs No Yes	1 3.15(1.91-5.19)*
Ever discussion about FP with woman by LHW No Yes	1 5.20(3.51-7.71)*
FP method offered by LHW No Yes	1 12.39(7.39-20.75)*
Woman took FP method from LHWs No Yes	1 13.67(7.71-22.48)*
Women used the FP method given by LHWs No Yes	1 26.00(13.32-50.76)*

Table 2: Univariate logistic regression to assess the predictors of contraceptive usage among women of district Thatta, Pakistan.
*P value < 0.05

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After adjustment of factors, the age of the woman was an independent predictor of contraceptive usage: each year increase in the age of the woman the odds of utilizing contraceptives increased by 10% [OR: 1.1; 95% CI (1.03 - 1.11)]. Similarly, women with secondary and intermediate education were twice likely to use contraceptives [OR for secondary education: 2.8; 95% CI (1.58 - 5.01) and OR for intermediate and above OR: 2.0; 95% CI (1.04 - 3.95)]. Likewise, contraceptive users were 1.9 times more likely to be rich compared to non-users [OR: 1.9; 95% CI (1.05 - 3.56)]. The users of contraceptives reported twice more unintended pregnancy [OR: 1.9; 95% CI (1.29 - 3.02)] compared to the nonusers. Conversely, distance from FP centers decreased contraceptive usage [(OR 0.9; 95% CI (0.87 - 0.98)] (Table 3).

Variables	Adjusted OR (95% CI)
Maternal age	1.07 (1.03 - 1.11)*
Distance of FP center from house of women (km)	0.93 (0.87 - 0.98)*
Educational Status of women Primary or less Middle to secondary Intermediate and above	 1 2.82 (1.58 - 5.01)* 2.03 (1.04 - 3.95)*
Intention of pregnancy Intended pregnancy Unintended pregnancy	 1 1.98 (1.29 - 3.02)*
Socioeconomic status Poor Rich	 1 1.93 (1.05 - 3.56)*

Table 3: *Multivariate logistic regression model: Socio demographic and fertility related factors predicting the contraceptive usage.*
*P value < 0.05

Discussion

Women's age, educational level, socio-economic status, intention of pregnancy and distance (kilometers) from the family planning centers were important predictors of modern contraceptive use in a rural district of Pakistan.

In this study, unintended pregnancy was associated with increased use of modern contraceptive methods. This was a new finding as most of the literature has not studied the relationship between the intention of pregnancy and contraceptive usage. Women who did not want to become pregnant were using modern contraceptive methods to avoid pregnancy, a finding consistent with a study conducted in urban Karachi, Pakistan [8]. Furthermore, most of the studies had assessed the relationship between contraceptive usage and intention of pregnancy but the reverse causation had not been evaluated much in the literature [17,18].

Moreover, age affects fertility, pregnancy, childbearing, women's opportunities for educational and economic empowerment and the ability to support their families, children and themselves. Our data revealed that increasing age was a strong predictor of usage of contraceptive. These findings were consistent with other studies [19]. Thus, older women more likely to choose contraceptive methods after completing their family [19]. This generally results in large family size. Therefore, intervention on younger women should be done so that they have better control to regulate the family size.

Women education was a strong predictor for modern contraceptive use. Therefore, raising the level of education was one of the effective strategies for promoting contraceptive use even in the rural areas of Pakistan. Substantial evidence was available on the effects of education on female empowerment, reproductive child, and maternal health. Formal education was particularly noted to be a strong predictor of contraceptive use and our findings were consistent with other studies conducted [19-24].

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Female education was considered as the most significant investment that can be made in the developing world [25]. It enables women to contribute to productive life, nation's development, promotion of smaller families and to improve the health of children [26].

Furthermore, women with more education usually have their first sexual experience later, marry later, want smaller families, and are more likely to use contraception than their counterparts [23]. Thus, education can be considered as a strong determinant of modern contraceptive utilization which empowers women to make appropriate decisions [23].

This study also assessed the effect of physical access (distance in kilometers) of family planning centers on the use of contraceptive methods. Proximity to functional family planning center was strongly associated with modern contraceptive use [27]. These findings were consistent with other studies across the world [27-29]. Although there was no accurate cutoff for the reasonable distance from family planning centers to improve the contraceptive usage but based on the studies it can be said that uptake of contraceptive methods might increase provided the services are available within the radius of 5 kilometers [27-29].

Higher socioeconomic status was associated with increased contraceptive use. Women with higher socioeconomic status are empowered or have more access to information and can afford contraceptive methods more as compared to the poor women. Findings from one of the studies conducted in Karachi, Pakistan also found the similar results [8]. Similarly, these findings were consistent with the other studies across the world [30-32] but contradictory to the findings from the studies conducted in Vietnam and Bangladesh [2,31].

One of the limitations of the study was that we did not explore the influence of husband's involvement in the family planning, which has been considered as an important predictor of contraceptive usage in literature. Furthermore, studies have also found other important factors predicting the modern contraceptive usage [2,8,11,19,22,24,33-37].

Despite of the above limitations, our study had a relatively large sample (800 women) to assess the relationship between the important variables and modern contraceptive usage in the rural area of Pakistan.

The study concluded that maternal age, women's education, socioeconomic status, intention of a woman for pregnancy and distance were independent predictors for contraceptive use in district Thatta. There is a need for increased access to family planning services to the women of reproductive age, particularly for younger age poor and less educated women in different geographical locations. Efforts were required to address the socio demographic differentials in contraceptive use by married women prior to their pregnancy. Encouraging women to decide for higher education may address the existing socio economic barriers. Also, the family planning programs should be oriented to take care of the geographical variations in the study behavior.

Bibliography

1. WHO: Millennium Development Goal (MDG) 5: Improve Maternal Health (2012).

2. Vu LTH., *et al*. "Use of modern contraceptives among married women in Vietnam: a multilevel analysis using the Multiple Indicator Cluster Survey (2011) and the Vietnam Population and Housing Census (2009)". *Global Health Action* 9 (2016): 29574.

3. International Institute for Population Sciences (IIPS) and Macro International. "National Family Health Survey (NFHS-3)- 2005-2006" (2007).

4. "Nepal Demographic and Health Survey 2011". Kathmandu, Nepal: Ministry of Health and Population, New ERA, and ICF International, Calverton, Maryland (2012).

5. National Institute of Population Studies Islamabad Pakistan. "Pakistan Demographic and Health Survey. 2012-13".

6. Gakidou E and Vayena E. "Use of modern contraception by the poor is falling behind". *PLoS Medicine* 4.2 (2007): e31.

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7. Azmat SK., *et al*. "Assessing predictors of contraceptive use and demand for family planning services in underserved areas of Punjab province in Pakistan: results of a cross-sectional baseline survey". *Reproductive Health* 12 (2015): 25.

8. Fikree FF., *et al*. "What influences contraceptive use among young women in urban squatter settlements of Karachi, Pakistan?" *International Family Planning Perspectives* 27.3 (2001): 130-136.

9. Goudar SS., *et al*. "The maternal and newborn health registry study of the global network for women's and children's health research". *International Journal of Gynecology and Obstetrics* 118.3 (2012): 190-193.

10. Noor Ali R., *et al*. "Does use of a government service depend on distance from the health facility?" *Health Policy and Planning* 14.2 (1999): 191-197.

11. Ali S., *et al*. "Prevalence and factors associated with practice of modern contraceptive methods among currently married women in District Naushahro Feroze". *Journal of the Pakistan Medical Association* 54.9 (2004): 461-465.

12. District Thatta, Sindh Profile 29ᵗʰ December 2009.

13. Baig JA and Kazi TG. "Translocation of arsenic contents in vegetables from growing media of contaminated areas". Ecotoxicology and Environmental Safety 75.1 (2012): 27-32.

14. Macro International Inc. Calverton MU. Demographic and Health Survey. National Institute of Population Studies Islamabad, Pakistan 2012-2013.

15. Cu Le L., *et al*. "Reassessing the level of unintended pregnancy and its correlates in Vietnam". *Studies in Family Planning* 35.1 (2004): 15-26.

16. Stephenson R., *et al*. "Domestic violence, contraceptive use, and unwanted pregnancy in rural India". *Studies in Family Planning* 39.3 (2008): 177-186.

17. Dixit P., *et al*. "Determinants of unwanted pregnancies in India using matched case-control designs". *BMC Pregnancy and Childbirth* 12 (2012): 84.

18. Tebekaw Y., *et al*. "Prevalence and determinants of unintended childbirth in Ethiopia". *BMC Pregnancy and Childbirth* 14 (2014): 326.

19. Unumeri G., *et al*. "Contraceptive Use and Its Socio-economic Determinants among Women in North-East and North-West Regions of Nigeria: A Comparative Analysis". *African Population Studies* 29.2 (2015): 1851-1874.

20. Achan SF., *et al*. "Coping strategies of young mothers at risk of HIV/AIDS in the Kassena-Nankana district of Northern Ghana". *African Journal of Reproductive Health* 13.1 (2009): 61-78.

21. Maharaj P and Cleland J. "Condom use within marital and cohabiting partnerships in KwaZulu-Natal, South Africa". *Studies in Family Planning* 35.2 (2004): 116-124.

22. Mohsena M and Kamal N. "Determinants of Contraceptive Use in Bangladesh". *Ibrahim Medical College Journal* 8.2 (2016): 34-40.

23. Martin TC and Juarez F. "The impact of women's education on fertility in Latin America: Searching for explanations". *International Family Planning Perspectives* 21.2 (1995): 52-80.

24. Palamuleni ME. "Socio-economic and demographic factors affecting contraceptive use in Malawi". African *Journal of Reproductive Health* 17.3 (2013): 91-104.

25. Malhotra A and Schuler SR. "Women's empowerment as a variable in international development". *Measuring empowerment: Cross-Disciplinary Perspectives* (2005): 71-88.

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26. Herz BK and Sperling GB. "What works in girls' education: Evidence and policies from the developing world: Council on foreign relations" (2004).

27. Pullum TW. "The relationship of service availability to contraceptive use in rural Guatemala". Presented at the Annual Meeting of the Population Association of America Washington DC (1991).

28. Bongaarts J and Bruce J. "The causes of unmet need for contraception and the social content of services". *Studies in Family Planning* 26.2 (1995): 57-75.

29. Ahmed B. "Determinants of contraceptive use in rural Bangladesh: the demand for children, supply of children, and costs of fertility regulation". *Demography* 24.3 (1987): 361-373.

30. Elfstrom KM and Stephenson R. "The role of place in shaping contraceptive use among women in Africa". *PloS one* 7.7 (2012): e40670.

31. Burgard SA and Lee-Rife SM. "Community characteristics, sexual initiation, and condom use among young black South Africans". *Journal of Health and Social Behavior* 50.3 (2009): 293-309.

32. Stephenson R., *et al.* "Community and health facility influences on contraceptive method choice in the Eastern Cape, South Africa". *International Family Planning Perspectives* 34.2 (2008): 62-70.

33. Mohammed A., *et al.* "Determinants of modern contraceptive utilization among married women of reproductive age group in North Shoa Zone, Amhara Region, Ethiopia". *Reproductive Health* 11 (2014): 13.

34. Kamal SMM. "Socioeconomic factors associated with contraceptive use and method choice in urban slums of Bangladesh". *Asia-Pacific Journal of Public Health* 27.2 (2015): NP2661-NP2676.

35. Walvekar PR. "Determinants of contraceptive use among married women residing in rural areas of Belgaum". *Journal of Medical and Allied Sciences* 2.1 (2012): 7.

36. Kidayi PL., *et al.* "Determinants of Modern Contraceptive Use among Women of Reproductive Age in Tanzania: Evidence from Tanzania Demographic and Health Survey Data". *Advances in Sexual Medicine* 5 (2015): 43-52.

37. Asiimwe JB., *et al.* "Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis". *BMC Public Health* 14 (2014): 926.

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