

Prevalence and determinants of Unintended Pregnancy: Systematic Review

Sumera Aziz Ali (1)
Shiyam Sunder Tikmani (2)
Waris Qidwai (3)

(1) Senior Instructor, Department of Community Health Sciences Aga Khan University, Karachi, Pakistan

(2) Instructor, Research, Community Health Sciences, Aga Khan University, Karachi, Pakistan

(3) Professor and Chairman, Family Medicine Department, Aga Khan University, Karachi Pakistan

Correspondence:

Dr. Waris Qidwai
Professor and Chairman,
Family Medicine Department
Aga Khan University Karachi Pakistan
Tel: (92-21) 486-4843, 486-4814
Fax: (92-21) 493-4294, 493-2095
Email: waris.qidwai@aku.edu

Abstract

Background: Unplanned pregnancy is one of the leading causes of maternal mortality and morbidity in the world. The objective of this systematic review was to synthesize the findings of various studies regarding prevalence and determinates of unintended pregnancy.

Data sources: A range of electronic databases was searched for studies conducted in developing countries and published between 1990 and 2015. English-language publications were searched using relevant keywords, and reference lists were hand searched.

Review methods: A systematic review was carried out for all the quantitative studies which met the inclusion criteria. The quality of selected studies was assessed using Newcastle-Ottawa Scale.

Results: Twenty-two papers were included in the review. Average prevalence of unintended pregnancy was estimated to be 35% ranging from 13% to 82%. The predictors of unintended pregnancy were found to be, socio-demographic factors include women's age, women's education, parity, birth order and interval, previous pregnancy intention, age at the time of marriage, socioeconomic status, marital status, religion, caste, and ethnicity.

Conclusion: Main correlates were found to be age, parity, educational and economic status. This means that undertaking outreach in poor countries might be helpful in fulfilling the needs of Family planning for these women. Furthermore, community-based distribution of family planning methods or counseling should be targeted to the illiterate older aged women of reproductive age with poor socioeconomic status.

Key words: unintended pregnancy, developing countries, prevalence, predictors, systematic review

Introduction

According to United Nations (UN) estimation, the world population is going to reach to 8.1 billion by the year 2025. Developing countries are attributing to 97% of this burden, which means 75-78 million people are added annually by developing countries(1). If this addition persists, the population of developing countries will increase from 5.9 billion (in 2013) to 8.2 billion (in 2050) and Asia and Africa countries will contribute 90% of the increase in population(2). The reason that developing countries will contribute more towards the world's population is because of their high birth rate, which in turn is due to low contraceptive use(2).

Worldwide use of the modern method of contraception has increased from 54% to 57%; however contraceptive usage rates vary widely across the world(3). In developed countries, more than 80% of women in reproductive age group (15-49 years) use contraceptives(2), while contraceptive use is much lower in African (21%) and Asian (67%) countries(2). The relatively high usage rates in Asia are driven to a large extent by near abundant usage in China (85%), Iran (79%), Sri Lanka (68%), Japan (54%), India (54%), Bhutan (66 %) and Indonesia (61%). While Pakistan (35%), Afghanistan (23%), Maldives (35%) and Nepal (48%) still lag behind(4, 5). Low contraceptive prevalence rates are directly related to a high number of unintended pregnancies(4).

Unintended pregnancies are reported to have been either unwanted (i.e. occurred when no more children, were desired) or mistimed (occurred earlier than desired)(6). Out of 210 million pregnant women, 75 to 80 million women experience unintended pregnancies, of which approximately 42 to 46 million pregnancies are terminated annually worldwide (2, 7, 8).

Currently, both developed and developing countries are facing the problem of unintended pregnancies (9, 10). Although worldwide, from 1995 to 2008 the rate of unintended pregnancy has declined by 20%, from 69 to 55 per 1000 women(9, 10). This decline in the rate of unintended pregnancy was greater in the developed world, where it fell by 29 percent (from 59 to 42 per 1000 women); while it declined by 20 percent, from 71 to 57 per 1000 women in the developing countries(9, 10). The highest rates of unintended pregnancies were in Africa (86 /1000 women) and the lowest were in Europe (38/1000 women) (9, 10).

Despite such decline in rates of unintended pregnancies, its proportion is still high i.e. about 4 out of 10 pregnancies (40%) were unintended worldwide in 2008, with a high proportion in South America and Southern Africa, where 6 out of 10 pregnancies were unintended(9, 10). It was even more in developing regions like Latin America and the Caribbean region (58%), South Africa (59%), South America (64%) and North America (48%)(9, 10).

Unplanned pregnancy is one of the leading causes of maternal mortality and morbidity in South Asia(6). It is estimated that every year about one-third of pregnancies are declared unintended in South and South-East Asia. In 2008, the proportion of unintended pregnancies in Bangladesh was 30%, while it was 21% in India and 35% in both Iran(10) and Nepal(1), 46 % both in Yamagata (Japan) and Pakistan(11, 12). Various reasons for unintended pregnancies have been identified, which include non-use of contraceptive methods and contraceptive method failure(13). Non- use of contraceptive methods is one of the important reasons for unintended pregnancy, which is mainly due to the high unmet need for contraceptives. Contraceptive method failure incorporates both users and technological faults(13).

In addition to this, different factors may predict or determine unintended pregnancy and numerous studies have reported different predictors of unintended pregnancies. Although the prevalence and determinants of unintended pregnancy are reported from multiple countries through various studies, however these studies are not compiled and synthesized particularly both from developed and developing countries. Thus, the objective of this systematic review was to synthesize the findings of various studies regarding prevalence and determinates of unintended pregnancy.

Methods

Eligibility criteria

Eligible studies were those that were cohort or demographic health surveys, conducted in low-, middle or high-income countries, reported the prevalence and risk factors of unintended pregnancy and reported estimates of the odds ratio, risk ratio, or relative risk.

Search strategy

Under guidance of the librarian, we searched a range of electronic bibliographic databases: Medline and Embase through Ovid (1990 to 2015), Cochrane Library through Wiley Interscience, Cumulative Index to Nursing and Allied Health Literature (CINAHL) through EBSCO Host, PubMed through the National Center for Biotechnology Information (NCBI), and SCOPUS through Elsevier. We used a combination of Medical Subject Headings keywords, and text words for "unintended AND pregnancy", "prevalence", "mistimed", "unwanted", "risk factors", "predictors", "determinants" and "correlates" that appeared in abstracts and titles.

Search outcome

Data abstraction and quality assessment

Two reviewers (Medical doctors) independently abstracted data from all of the included studies. Abstracted data included study design; type of database used for analysis (population-based or hospital-based); characteristics of the study subjects, unintended pregnancy definition; potential confounders or effect modifiers considered; and risk ratio or odds ratio for unintended pregnancy. We assessed the quality of each study using the Newcastle-Ottawa

Scale(14) for all studies. Differences in data abstraction were resolved by consensus between two reviewers.

Results

Search outcome

Of 4598 research papers initially identified using the search criteria, 4430 articles were found to be irrelevant after reviewing the titles. The abstracts of the remaining 168 papers with relevant articles were then examined. Of these, 130 abstracts were found to be irrelevant. Thus, full papers of the remaining 38 abstracts were accessed and 6 were found to be duplicates. Finally, 32 full papers were assessed for quality and eligibility. Thus, 22 unique citations were identified which met the inclusion criteria (Figure 1). The characteristics of the individual studies are summarized in Table 1.

Those studies which were conducted from 1990 to 2015 were retrieved for this review. Studies varied with regard to criteria for defining unintended pregnancy. Some of the studies had assessed the intention through binary outcome (intended or unintended) while others had assessed the intention under three categories (mistimed, wanted and unwanted). All studies were quantitative and among the selected studies, 8 analyzed secondary data from demographic health surveys or other national health surveys, while 14 were primary studies including 12 cross-sectional studies and 2 cohort studies.

Of the 22 studies, 18 had measured the prevalence of unintended pregnancy and 22 had measured the determinants of unintended pregnancy. Of these 22 studies, 11 were from Africa, 9 from Asia, 1 each from Europe and North America. All the determinants were categorized into three themes i.e. Socio-demographic factors, Affordability and women's knowledge, attitudes, beliefs and culture.

Prevalence of Unintended pregnancy

Of the 18 studies which had measured the prevalence of unintended pregnancy, it was found that average prevalence was estimated to be 35% ranging from 13% to 82%.

Factors determining the unintended pregnancy

Socio-demographic factors

Socio-demographic factors included women's age, women's education, parity, birth order and interval, previous pregnancy intention, age at the time of marriage, socioeconomic status, marital status, religion, caste, and ethnicity. Thirteen studies found that women's age was the best predictor of pregnancy intention (Table 1). Of these, 8 studies showed that older women were more likely to experience unintended pregnancy (15-21) while five studies had shown that younger women were at risk of unintended pregnancy (17, 21-24). Seven studies found that women's education was the best predictor of pregnancy intention (Table 1). Of these, 5 studies showed that women with primary or less education were more likely to experience unintended pregnancy (17, 19, 25-27) while two studies had shown contradictory findings(20, 26).

Ten studies found strong associations between parity and pregnancy intention (Table 1). Among all the studies, higher parity was generally found to be the positive predictor of unintended pregnancy. In addition to this, four studies found strong associations between age at the time of marriage and pregnancy intention (Table 1). All the studies had shown the inverse relation between age at the time of marriage and pregnancy intention, as the age at the time of marriage increased, the likelihood of unintended pregnancy reduced (20, 28-30). Likewise, five studies showed that religion played a significant role for the pregnancy intention. Around 60% of these studies found that non-Muslims were less likely to experience unintended pregnancy as compared to Muslims while 40% had shown the opposite findings(17, 31).

Seven studies found strong associations between marital status and pregnancy intention (Table 1). Of these, four studies found that married women were less likely to experience unintended pregnancy as compared to unmarried women. Three studies found that married women were more at risk of experiencing unintended pregnancy (Table 1).

Affordability

Eight studies found significant relationships between economic factors (socio-economic status or income of the household, working status of woman and woman's employment) and pregnancy intention (20, 28-30). The financial constraint was the most important factor determining the intention of pregnancy. Generally, women with high economic status were less likely to experience unintended pregnancy except the one study, which contradicted the above findings.

Women's knowledge, attitudes, beliefs, and culture

Different variables were included under this category like access to media, knowledge and practice of Family planning methods. Only one study from Nepal showed that exposure to mass media (radio) significantly predicted pregnancy intention (Table 1). Women with high levels of exposure were less likely to experience unintended pregnancy(28).

Four studies had found the strong association between pregnancy intention and knowledge of Family planning methods (Table 1). Of these 4 studies, 50% had shown that knowledge was positively associated with pregnancy intention and 50% of these had shown the negative association between two variables(28, 32). Additionally, eight studies had shown that contraceptive usage had also shown significant association with unintended pregnancy, 6 studies found the positive association with unintended pregnancy while 2 studies found the negative association.

Table 1: Prevalence and determinants of unintended pregnancy (Part 1)

Study	Year	Country	Study design	Prevalence of Unintended pregnancy	Important Statistically significant factors
Kamal Mustafa et al.	2011	Bangladesh	Bangladesh Demographic & Health Survey	30%	<ul style="list-style-type: none"> Higher Socioeconomic status: OR 0.74 (95% CI 0.59-0.93) and 0.63 (95% CI 0.47-0.84) respectively Ever use of contraceptive methods: OR 1.81 (95% CI 1.20-2.72) and 1.92 (95% CI 1.54-2.39)
Ikamari L et al.	2013	Kenya	Cross sectional survey	24%	<ul style="list-style-type: none"> Age 20-34: OR 0.20 & 35-49: OR 0.19 Currently married women: OR 0.09 (p<0.001) & formerly married: 0.15 (p<0.001) Parity 3+: 2.45 (p<0.001)
Ma. Q et al.	2013	China	Cross sectional study	43%	<ul style="list-style-type: none"> Married women: OR 2.99 (95% CI 1.12-7.96)
Kassa N et al.	2012	Ethiopia	Kersa Demographic Surveillance and Health Survey	27%	<ul style="list-style-type: none"> Age >40 years: OR 4.08 (95% CI 1.14-14.21) Parity 5-6 births: OR 6.12 (95% CI 2.41-15.57) & 7+ births: OR 14.34 (95% CI 5.72-35.98) Poor wealth quintile: OR 1.68 (95% CI 1.26-2.25)
Youseef RM et al.	2003	Egypt	Cross sectional survey	24%	<ul style="list-style-type: none"> Age of women <30 years: OR 2.1 (95% CI 1.28-3.44) Never used contraceptives: OR 2.31 (95% CI 1.52-3.45) >2 living children: 1.91 (95% CI 1.16-3.15)
Habte D et al.	2013	Ethiopia	Ethiopian Demographic and Health Survey	Not calculated	<ul style="list-style-type: none"> Age 25-29 years: OR 0.46 (95% CI 0.25-0.83) & 30-34 years: OR 0.40 (95% CI .20-.78) Primary education: OR 2.38 (1.73-3.26) Ever use of family planning: OR 1.79 (95% CI 1.31-2.45) >5 ever born children: OR 2.36 (95% CI 1.01-5.49)
Tebekaw et al.	2014	Ethiopia	Ethiopian Demographic and Health Survey	32%	<ul style="list-style-type: none"> Age 15-19: OR 1.68 (95% CI 1.25-2.25) Secondary education: OR 0.5 (0.33-0.76) Rich women: OR 3.11 (95% CI 1.32-7.32) Parity 6+: OR 2.56 (1.43-4.57) Married women: OR 0.18 (95% CI 0.12-0.53) Knows at least one contraceptive method: OR 1.78 (95% CI 1.21-2.62)

Table 1: Prevalence and determinants of unintended pregnancy (Part 2)

Eliason S et al.	2014	Ghana	Cross sectional survey	70%	<ul style="list-style-type: none"> Parity 5+: OR 6.06 (95% CI 3.24-11.38) Marital status (engaged) OR 1.58 (95% CI 1.10-2.28); cohabitation OR 2.91 (1.96-4.31); Single OR 7.32 (95% CI 4.21-12.75) Awareness of traditional family planning method: OR 0.66 (95% CI 0.49-0.89)
Takahashi S. et al	2012	Japan	The Hamamatsu Birth Cohort (HBC) Study	Not calculated	<ul style="list-style-type: none"> ≤ 12 years of education: OR 1.7 (95% CI 1.0-2.9) & ≥ 17 years of education: OR 3.3 (1.1-9.9) Household income ≥8 million JPY: OR 0.4 (95% CI 0.2-0.9)
Dixit P et al.	2012	India	National Family Health surveys	Not calculated	<ul style="list-style-type: none"> Muslim women: OR 1.27 (95% CI 1.02-1.60) Ever used contraceptives: OR 1.85 (95% CI 1.64-2.09)
Adhikari R et al.	2009	Nepal	Nepal Demographic and Health Survey	41%	<ul style="list-style-type: none"> Age of women (OR 1.105), Ideal number of children (OR 0.725), Knowledge of family planning methods (OR 0.60)
Faye CM et al.	2013	Senegal	Cross sectional survey	14.3%	<ul style="list-style-type: none"> Medium wealth group: RRR 0.6 (95%CI 0.45-0.80) & rich wealth group: RRR0.6 (0.43-0.84) Married women: RRR 0.33 (95% CI 0.21-0.51) Age 40+: RRR 0.21 (95%CI 0.21-0.73) 4+ living children: RRR 4.85 (95% CI 2.62-8.99) Ever used contraceptive: RRR 0.65 (95% CI 0.46-0.9)
Che Y et al.	2004	China	Cohort study	21%	<ul style="list-style-type: none"> Wife's age at marriage between 20-23 years: OR 2.21 (95%CI 1.62-3.01)
Font-Ribera L et al.	2007	Spain	Cross sectional study	41%	<ul style="list-style-type: none"> Age between 15-24: OR 4.37 (95%CI 3.21-5.95) <Primary education: OR 7.22 (95% CI 4.82-10.81)
Exavery A et al.	2014	Tanzania	Cross sectional survey	13.4%	<ul style="list-style-type: none"> Parity >4: OR 2.65 (1.54-4.54)
Besculides M et al.	2004	USA	Cross sectional survey	82%	<ul style="list-style-type: none"> Age between 10-19 years: OR 2.03 (95%CI 1.66-2.47) & age between 30-39 years: OR 0.67 (0.54-0.84) Unmarried women: OR 2.52 (95% CI 2.19-2.87) Never used contraceptives: OR 0.36 (95% CI 0.29-0.45)

Table 1: Prevalence and determinants of unintended pregnancy (Part 3)

Goto A et al.	2002	Japan	Cross sectional survey	46.20%	<ul style="list-style-type: none"> • Marriage during teens OR 11.14
Islam MM et al.	2004	Bangladesh	Bangladesh Demographic and health Survey	13% unwanted and 19% mistimed	<ul style="list-style-type: none"> • Age 30+: OR 3.44 • Primary education: OR 1.16 • Parity: OR 1.56 • High socioeconomic status: OR 0.78 • Use of modern contraceptive methods: OR 2.42
Le CL et al.	2004	Vietnam	Demographic and health survey	40%	<ul style="list-style-type: none"> • Age of women 40+: OR 8.97 (p<0.001) • Use of traditional method of contraceptive: OR 4.14 (p<0.001) & modern method OR 4.24 (p<0.001)
Okonofua FE et al.	1999	Nigeria	Cross sectional Survey	20%	<ul style="list-style-type: none"> • Age 45+: OR 3.4 • Secondary education: 1.9 & University level education: 3.4 • Knowledge of FP methods: OR 2.0 & knows
Sedgh G et al.	2006	Nigeria	Community based survey	Not calculated	<ul style="list-style-type: none"> • Women age 40+: OR 0.3 • Married women: 2.5
Hamdela B et al.	2012	Ethiopia	Cross sectional study	Not calculated	<ul style="list-style-type: none"> • Number of pregnancy ≥5: OR 5.6 (95% CI 1.62-19.41)

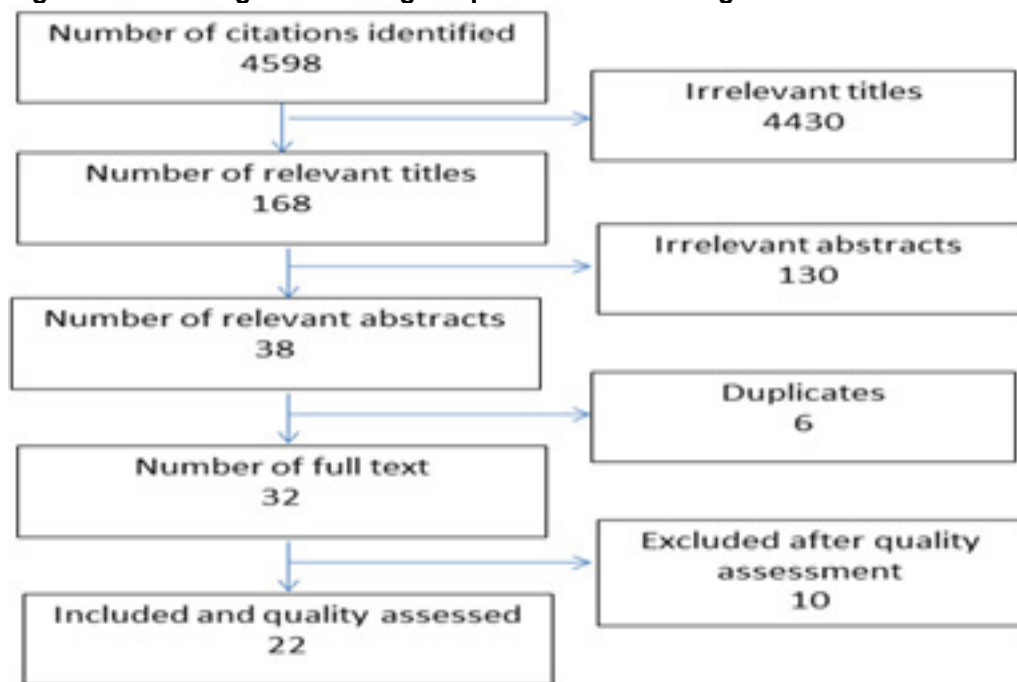
Legend to Table 2 (opposite page)

*According to the Newcastle-Ottawa Scale for cross sectional and case-control studies in Systematic review. Maximum score for selection = 4 stars, maximum score for comparability = 2 stars, maximum score for outcome or exposure (for case-control studies) = 3 stars, maximum total score = 9.

Table 2: Quality assessment* of individual studies included in the systematic review

Eliason S et al.	2014	Ghana	Cross sectional survey	70%	<ul style="list-style-type: none"> Parity 5+: OR 6.06 (95% CI 3.24-11.38) Marital status (engaged) OR 1.58 (95% CI 1.10-2.28); cohabitation OR 2.91 (1.96-4.31); Single OR 7.32 (95% CI 4.21-12.75) Awareness of traditional family planning method: OR 0.66 (95% CI 0.49-0.89)
Takahashi S. et al	2012	Japan	The Hamamatsu Birth Cohort (HBC) Study	Not calculated	<ul style="list-style-type: none"> ≤ 12 years of education: OR 1.7 (95% CI 1.0-2.9) & ≥ 17 years of education: OR 3.3 (1.1-9.9) Household income ≥8 million JPY: OR 0.4 (95% CI 0.2-0.9)
Dixit P et al.	2012	India	National Family Health surveys	Not calculated	<ul style="list-style-type: none"> Muslim women: OR 1.27 (95% CI 1.02-1.60) Ever used contraceptives: OR 1.85 (95% CI 1.64-2.09)
Adhikari R et al.	2009	Nepal	Nepal Demographic and Health Survey	41%	<ul style="list-style-type: none"> Age of women (OR 1.105), Ideal number of children (OR 0.725), Knowledge of family planning methods (OR 0.60)
Faye CM et al.	2013	Senegal	Cross sectional survey	14.3%	<ul style="list-style-type: none"> Medium wealth group: RRR 0.6 (95%CI 0.45-0.80) & rich wealth group: RRR0.6 (0.43-0.84) Married women: RRR 0.33 (95% CI 0.21-0.51) Age 40+: RRR 0.21 (95%CI 0.21-0.73) 4+ living children: RRR 4.85 (95% CI 2.62-8.99) Ever used contraceptive: RRR 0.65 (95% CI 0.46-0.9)
Che Y et al.	2004	China	Cohort study	21%	<ul style="list-style-type: none"> Wife's age at marriage between 20-23 years: OR 2.21 (95%CI 1.62-3.01)
Font-Ribera L et al.	2007	Spain	Cross sectional study	41%	<ul style="list-style-type: none"> Age between 15-24: OR 4.37 (95%CI 3.21-5.95) <Primary education: OR 7.22 (95% CI 4.82-10.81)
Exavery A et al.	2014	Tanzania	Cross sectional survey	13.4%	<ul style="list-style-type: none"> Parity >4: OR 2.65 (1.54-4.54)
Besculides M et al.	2004	USA	Cross sectional survey	82%	<ul style="list-style-type: none"> Age between 10-19 years: OR 2.03 (95%CI 1.66-2.47) & age between 30-39 years: OR 0.67 (0.54-0.84) Unmarried women: OR 2.52 (95% CI 2.19-2.87) Never used contraceptives: OR 0.36 (95% CI 0.29-0.45)

Figure 1: Flow diagram showing the process of retrieving the articles



Discussion

This review has evaluated all the peer-reviewed studies, published in English language from 1990-2015. It was found that the prevalence of unintended pregnancy ranged from 13-82%. Common predictors identified were age, parity, socioeconomic status, religion and use of family planning methods. Age was found to be positively associated with unintended pregnancy in most of the studies. Studies from Bangladesh, Ethiopia, Egypt, Nepal, Spain, Vietnam and Nigeria reported the positive association of age with an unintended pregnancy (16, 21, 23, 27, 28, 33, 34). Consistent with definitions of mistimed and unwanted pregnancies, this review showed that mistimed pregnancies occurred to younger women and were seen more often in the first and second pregnancies, while unwanted pregnancies occurred to older women and in the third or later pregnancies. Furthermore, this analysis showed that many mistimed and unwanted pregnancies occurred either as a result of no contraceptive use, or due to method failure. Although we could not explore the types of methods used by the women or reasons for method failure, the increased likelihood of unintended pregnancy among users of contraceptive methods could be due to inappropriate usage of short term methods, which has been highlighted through prior research(35).

Studies from Kenya, Ethiopia, Ghana, Tanzania and Bangladesh reported that high parity was significantly associated with unintended pregnancy (22, 23, 31-33). These findings can be explained by the fact that couples from rural areas prefer to have more sons and they may end up having more children. Furthermore, women in the Asian region usually prefer to have enough sons who can become their source of income for the family(34). Moreover, these couples want to balance the sex of their children, and will continue to give birth if all the children are of the same sex.

In this review, it was found that wealth quintile and educational status was associated with unintended pregnancy in the same direction. Studies from Ethiopia, Japan, Spain, Bangladesh and Nigeria reported that illiterate women or women with primary education are at risk of unintended pregnancy (17, 23, 26, 27, 33). This finding can be explained by the fact that women may not even realize that they are pregnant until it has become too late, and they may not be able to negotiate with their spouses with regards to safe sex.

Knowledge about contraceptives was reported to be negatively associated with unintended pregnancy(17, 28). Various studies found that women who have more knowledge about contraceptives are less likely to experience an unintended pregnancy, as compared to those who do not have adequate knowledge about these methods. Moreover, the use of contraceptive methods is positively associated with unintended pregnancy. Studies have also found a strong positive association between users of modern contraceptives and unintended pregnancy, which can be explained by the fact that users of these methods might fail. Since this review did not focus on method failure, therefore, it can be assumed that method failure might have increased the chances of unintended pregnancy among these women.

With respect to women's autonomy, men are usually considered as the main decision-makers in developing countries, and they decide when and where a woman should seek healthcare. Hence, women are often given less power in the male-dominant societies to decide for themselves, and they have to depend on the male partners/relatives for their survival and other life matters. Besides, social norms limit women's freedom to make important decisions(36). In some regions of South Asia, women have substantially lower social status and autonomy than men(37). It has been found that low social status and autonomy seems to be associated with low fertility control(38). Such women

are more likely to experience an unintended pregnancy, as compared to those who have some autonomy(36).

Strengths and Limitations of the Study

We believe that this is first systematic review on prevalence and predictors of unintended pregnancy, which has synthesized the data both from developing and developed countries. Despite the extensive literature review, there are some limitations to this study. Firstly, we had reviewed all the cross-sectional studies except one cohort study, therefore causal association between various determinants and unintended pregnancy cannot be determined to establish a relationship between unintended pregnancy and various studied correlates. Secondly, different countries have different predictors for unintended pregnancy, depending upon the epidemiologic and demographic variations in those particular countries, so results might not be generalized to all settings. Thirdly, this review included papers only in the English language and we might have missed the important information published in language other than English. The decision to exclude non-English language studies was made for practical reasons based on the increased time, expense and complexity of translating and synthesizing these studies. However, much research in developing countries may not be published in peer-reviewed journals, but might be available as gray literature in local languages. These limitations should have a minor impact on the scope of the study in view of the large size of the sample and that the main variables of interest are demographic factors associated with unintended pregnancy.

Conclusion and Recommendations

This review demonstrates that unintended pregnancy is common both in developing and developed countries and age, parity, educational and economic status can be considered as important determinants of the unintended pregnancy. This means undertaking outreach in poor and inaccessible settings and providing community-based distribution of family planning methods including counseling and referral for women with unmet need. In addition to this, programs can be undertaken to target youth through youth corners in existing health facilities or training providers in offering youth friendly services. Implementation of targeted programs will guarantee access to family planning for all categories of women in need. These types of targeted approaches can help women to meet their fertility desires and reduce unintended pregnancies with the overall objective of reducing maternal mortality and morbidity.

References

1. Haub C, Gribble J, Jacobsen L. World Population Data Sheet 2011. Population Reference Bureau, Washington. 2011.
2. Hossain SMI, Khan M, Rahman M, Sebastian MP. South east Asia regional training manual. New Delhi, India: Population Council. 2005.
3. Press B. Round Up. Reproductive Health Matters. 2010;18(35):211-8.
4. Ali SA, Ali SA. Unmet need for contraception and

- unintended pregnancies among women of reproductive age group: A situation analysis. *Elective Medicine Journal*. 2014;2(3):259.
5. Tsui AO, McDonald-Mosley R, Burke AE. Family planning and the burden of unintended pregnancies. *Epidemiologic reviews*. 2010:mxq012.
6. Smith R, Ashford L, Gribble J, Clifton D. Family planning saves lives. 2009.
7. Glasier A, Gülmezoglu AM, Schmid GP, Moreno CG, Van Look PF. Sexual and reproductive health: a matter of life and death. *The Lancet*. 2006;368(9547):1595-607.
8. Kott A. Rates of unintended pregnancy remain high in developing regions. *International perspectives on sexual and Reproductive Health*. 2011;37(1):46-7.
9. Singh S, Sedgh G, Hussain R. Unintended pregnancy: worldwide levels, trends, and outcomes. *Studies in family planning*. 2010;41(4):241-50.
10. Abbasi-Shavazi MJ, Hosseini-Chavoshi M. Unintended pregnancies in the Islamic Republic of Iran: levels and correlates. *Asia-Pacific population journal*. 2004;19(1):27-38.
11. Collumbien M, Gerressu M, Cleland J. Non-use and use of ineffective methods of contraception. 2004.
12. Sathar Z, Singh S, Rashida G, Shah Z, Niazi R. Induced abortions and unintended pregnancies in Pakistan. *Studies in family planning*. 2014;45(4):471-91.
13. Kost K, Singh S, Vaughan B, Trussell J, Bankole A. Estimates of contraceptive failure from the 2002 National Survey of Family Growth. *Contraception*. 2008;77(1):10-21.
14. Stang A. Critical evaluation of the Newcastle-Ottawa scale for the assessment of the quality of nonrandomized studies in meta-analyses. *European journal of epidemiology*. 2010;25(9):603-5.
15. Ma Q, Pan X, Cai G, Yan J, Xu Y, Ono-Kihara M, et al. Unintended Pregnancy and Its Correlates among Female Attendees of Sexually Transmitted Disease Clinics in Eastern China. *BioMed research international*. 2013;2013.
16. Youssef R, Moubarak I, Gaffar Y, Atta H. Correlates of unintended pregnancy in Beheira governorate, Egypt. 2002.
17. Tebekaw Y, Aemro B, Teller C. Prevalence and determinants of unintended childbirth in Ethiopia. *BMC pregnancy and childbirth*. 2014;14(1):1.
18. Faye CM, Speizer IS, Fotso JC, Corroon M, Koumtingue D. Unintended pregnancy: magnitude and correlates in six urban sites in Senegal. *Reproductive health*. 2013;10(1):59.
19. Islam MM, Rashid M. Determinants of unintended pregnancy among ever-married women in Bangladesh. *Journal of Family Welfare*. 2005;50(2):40.
20. Okonofua FE, Odimegwu C, Ajobor H, Daru PH, Johnson A. Assessing the prevalence and determinants of unwanted pregnancy and induced abortion in Nigeria. *Studies in family planning*. 1999;30(1):67-77.
21. Sedgh G, Bankole A, Oye-Adeniran B, Adewole IF, Singh S, Hussain R. Unwanted pregnancy and associated factors among Nigerian women. *International family planning perspectives*. 2006:175-84.
22. Ikamari L, Izugbara C, Ochako R. Prevalence and

determinants of unintended pregnancy among women in Nairobi, Kenya. *BMC pregnancy and childbirth*. 2013;13(1):1.

23. Kamal M, Islam A. Prevalence and socioeconomic correlates of unintended pregnancy among women in rural Bangladesh. *salud pública de méxico*. 2011;53(2):108-15.

24. Besculides M, Laraque F. Unintended pregnancy among the urban poor. *Journal of Urban Health*. 2004;81(3):340-8.

25. Habte D, Teklu S, Melese T, Magafu MG. Correlates of unintended pregnancy in Ethiopia: results from a national survey. *PLoS One*. 2013;8(12):e82987.

26. Takahashi S, Tsuchiya KJ, Matsumoto K, Suzuki K, Mori N, Takei N, et al. Psychosocial determinants of mistimed and unwanted pregnancy: the Hamamatsu Birth Cohort (HBC) study. *Maternal and child health journal*. 2012;16(5):947-55.

27. Font-Ribera L, Pérez G, Salvador J, Borrell C. Socioeconomic inequalities in unintended pregnancy and abortion decision. *Journal of Urban Health*. 2008;85(1):125-35.

28. Adhikari R, Soonthorndhada K, Prasartkul P. Correlates of unintended pregnancy among currently pregnant married women in Nepal. *BMC International Health and Human Rights*. 2009;9(1):1.

29. Che Y, Cleland J. Unintended pregnancy among newly married couples in Shanghai. *International family planning perspectives*. 2004:6-11.

30. Goto A, Yasumura S, Reich MR, Fukao A. Factors associated with unintended pregnancy in Yamagata, Japan. *Social Science & Medicine*. 2002;54(7):1065-79.

31. Exavery A, Kanté AM, Njozi M, Tani K, Doctor HV, Hingora A, et al. Predictors of mistimed, and unwanted pregnancies among women of childbearing age in Rufiji, Kilombero, and Ulanga districts of Tanzania. *Reproductive health*. 2014;11(1):63.

32. Eliason S, Baiden F, Yankey BA, Awusabo-Asare K. Determinants of unintended pregnancies in rural Ghana. *BMC pregnancy and childbirth*. 2014;14(1):1.

33. Kassa N, Berhane Y, Worku A. Predictors of unintended pregnancy in Kersa, Eastern Ethiopia, 2010. *Reprod Health*. 2012;9(1):2-7.

34. Le LC, Magnani R, Rice J, Speizer I, Bertrand W. Reassessing the level of unintended pregnancy and its correlates in Vietnam. *Studies in family planning*. 2004:15-26.

35. Keshtkaran A. The survey of effective factors on different practical failure methods of family planning in women referred to health centers. *Middle East Journal of Family Medicine*. 2005;3(2).

36. Ali A, Ali SA, Aziz Ali S, Khuwaja NS. Determinants of Unintended Pregnancy among Women of Reproductive Age in Developing Countries: A Narrative Review. *Journal of Midwifery and Reproductive Health*. 2016;4(1):513-21.

37. Weiner M. *Sons of the soil: Migration and ethnic conflict in India*. Princeton University Press; 2015.

38. Singh KK, Singh K, Singh BP, Pathak AK. Impact of education and autonomy on fertility of women in eastern Uttar Pradesh. *Demography India*. 2015;31(2):223-33.