

Study of pre-conception care (PCC) amongst women in the first trimester coming to the obstetrics and gynaecology (OBGY) outpatient department (OPD) of a hospital in a rural area

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ABSTRACT

Background: Pre-conception care (PCC) is a set of interventions that aim to identify and modify biomedical, behavioural and social risks to women's health and pregnancy outcomes. **Materials and Methods:** It was an observational descriptive cross-sectional study conducted in the obstetrics and gynaecology (OBGY) outpatient department (OPD) of a tertiary care teaching institute in a rural set-up. Two hundred women in the first trimester of pregnancy were interviewed using a pre-designed and pretested questionnaire following informed verbal consent. The study was conducted between May and September 2019. The study excluded women in the 2nd or 3rd trimester of pregnancy, inpatient department (IPD) patients and those unwilling to participate. **Results:** The study revealed that 25.5% of the women had conceived between 14 and 19 years of age. Fifty-four percent of the pregnancies were unplanned. Merely 14.5% had consulted and 15% had their laboratory investigations performed before pregnancy. Only 11% had received pre-conception folic acid supplementation. Pregnancies with birth spacing <2 years accounted for 15%. The proportion of women with known risk factors was 38% being underweight, 9.5% being overweight, 8% being of short stature (height \leq 145 cm), 63% having anaemia (haemoglobin <12 g/dL), 10% with a previous history of abortion, 3.5% with systemic diseases, 4.5% with poor oral hygiene, 1% with domestic violence, 3% with medication, 3% with tobacco addiction and 4.5% with radiation/environmental toxin exposure. One percent had the hepatitis B vaccine and 0.5% had the influenza vaccine. **Conclusion:** From our study, we conclude that the PCC services are meagre, and unhealthy women who conceive without adequate PCC are prone to maternal and foetal health complications.

Keywords: Anaemia, pre-conception care, underweight, unplanned pregnancies

Introduction

Pre-conception care (PCC) is a set of interventions that aim to identify and modify biomedical, behavioural and social

risks to women's health and pregnancy outcomes.^[1] It involves the assessment of the females in the pre-pregnancy as well as inter-pregnancy period with the administration of evidence-based interventions to optimize their health to withstand the pregnancy and to reduce foetal complications. The continuum of care of newborn survival extends from pre-conception to the post-partum period. Many government programs in our country target the antepartum, intra-natal, and postpartum periods; however, the

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crucial period of pre-conception remains neglected.^[1] India ranks second highest in the number of under-five deaths in the world^[2] and the maternal mortality ratio is towering high as 113/1,00,000 live births. Although for a developing country such as ours, the inclusion of the pre-conception period in the maternal care package would pose a great financial and logistic challenge. However, experience from high-income countries suggests that such programs are effective, and their cost is nullified by the averted complications. Ministry of Health and Family Welfare launched the India Newborn Action Plan (INAP) in September 2014, which included PCC; however, the major challenges faced by India are compliance towards care from the target population, lack of awareness, impeccable delivery of care and program monitoring and evaluation.^[1] In an integrated review article, the prevalence of pre-conception care was found to be from 18.1 to 45% in women with chronic diseases,^[3] whereas, in another study conducted in Iran, the prevalence of PCC was found to be 47.7%.^[4] Our study aims to assess the adequacy of the health status of females for pregnancy, the presence of risk factors and to know whether PCC was received.

The study results would serve as a guide for the family physicians and primary healthcare providers regarding the various health parameters and risk factors that need to be assessed when a female comes for a preconception health check-up and the corrective measures to optimize the health status because of improving the pregnancy outcomes. Furthermore, this knowledge would help them promote and educate young women in the eligible group to seek pre-conception health care.

Materials and Methods

The study was initiated after approval from the Institutional Ethics Committee.

Setting

Obstetrics and gynaecology outpatient department of a tertiary care hospital in a rural area.

Study design

Observational descriptive cross-sectional study.

Study participants

Women in the first trimester of pregnancy were chosen as the study participants. Considering the complexity of finding non-pregnant females in the community planning to conceive due to the high incidence of unplanned pregnancies, we chose pregnant females to know the extent of pre-conception care received. To avoid recall bias, women in the first trimester of pregnancy were chosen.

Sample size

200. Considering the prevalence of 40%^[3] and allowable error of 7%, the calculated sample size was— $4pq/l^2 = 4 \times 40 \times 60/7 \times 7 = 195$ (thus, we took a sample size of 200).

Study duration

May to September 2019.

Consent

Informed verbal consent.

Data Collection

The pre-designed, pretested questionnaire used for interviewing the participants included-

- Particulars of the participants-name, age, address, age at marriage and age at first childbirth.
- General examination of height, pre-pregnancy weight, body mass index (BMI), and hemoglobin.
- Questionnaire included:

Whether the pregnancy was planned, if a consultation was performed before pregnancy, if they had received any medication such as folic acid before pregnancy, their involvement in risky sexual behavior, any sexually transmitted diseases, systemic diseases, or family history of genetic disorders.

The number of pregnancies, the interval between subsequent pregnancies, and abortions if any (legal or illegal).

Inquiry about oral hygiene, mental health, psychiatric consultation if any, domestic violence, addictions, exposure to radiation, or environmental toxins.

If they had received vaccines (such as rubella, hepatitis B, human papillomavirus, varicella zoster, influenza) or had any laboratory investigations performed before pregnancy.

Inclusion criteria

- Females in the first trimester of pregnancy coming to the obstetrics and gynaecology (OBGY) outpatient department (OPD) of a tertiary care teaching institute, are willing to participate.

Exclusion criteria

- In Patient Department (IPD) patients.
- Females in the second and third trimesters of pregnancy.
- Females who refused consent.

Data Analysis

Data were entered in an Excel sheet and bar diagrams, pie charts, and tables were made for interpretation.

Results

Age of the study population at the time of marriage-30 (15%) females were below 18 years of age at the time of marriage [Figure 1].

About 51 (25.5%) women had their first child between 14 and 19 years of age.

Around 54% of the pregnancies were unplanned (108 out of 200).

Birth order of pregnancies [Figure 2].

In 15% of cases, the interval between subsequent pregnancies was less than 2 years.

About 16 (8%) women had short stature (height < 145 cm).

Pre-pregnancy body mass index (BMI) of the study population [Table 1].

Most women (126; 63%) were anaemic with Hb < 12 g/dL.

Merely 29 (14.5%) women in the study population had received consultation before pregnancy and 30 (15%) of women had their lab investigations performed before the pregnancy. Twenty (11%) women had received pre-conception folic acid supplementation.

Around 20 (10%) women in the study population reported a previous history of abortions, whereas 1 (0.5%) had a history of stillbirth.

All women in our study denied their or their partner's involvement in risky sexual behaviour and none reported having any sexually transmitted diseases. Or even if they did, they did not disclose it to the interviewer.

About 7 (3.5%) of the women had systemic diseases that included hypertension (3; 1.5%), tuberculosis (2; 1%), breathlessness due to an undiagnosed cause (1; 0.5%), and spondylitis (1; 0.5%). Diseases under consideration in our study were hypertension, diabetes mellitus, tuberculosis, asthma, heart diseases, renal diseases, thyroid dysfunction, jaundice, viral hepatitis, hypotension, Toxoplasma, Rubella, cytomegalovirus, herpes zooster (TORCH) infections, epilepsy, malaria, and spondylitis.

The proportion of known risk factors is given in Table 2.

Indian law, the minimum legal age of marriage for women is 18 years. Indian parliament is even considering raising this limit to 21 years to bring them on equal footing with men and empower them to pursue their careers.

About 25.5% of the women in our study had their first pregnancy between 14 and 19 years of age. Teenage pregnancies increase the risk of stillbirths and preterm births. According to National Family health Survey (NFHS) 4, the prevalence of teenage pregnancies is 7.9% for the age group 15–19 years and is lower in urban areas (5%) compared to rural areas (9.2%).

A large proportion, that is, 54% of the pregnancies were unintended and unplanned making delivery of pre-conception care to almost half of the study population difficult. In India, in 2015, at a pregnancy rate of 144.7 per 1000 women aged 15–49 years, the rate of unintended pregnancies was 70.1 per 1000.^[5]

In our study, for 15% study population, the interval between subsequent pregnancies was <2 years and >5 years in 1.5% of cases. The World Health Organization (WHO) and other

Table 1: Distribution of women as per Body Mass Index

BMI	Number of females	Percentage
Underweight (BMI-18.5)	76	38%
Normal (BMI-18.5-24.9)	105	52.5%
Overweight (BMI-25-29.9)	19	9.5%

Table 2: Risk factors amongst women

Risk factors	Number of women	Proportion
Tobacco addiction	6	3%
Medication	6	3%
Radiation/environmental toxin exposure	9	4.5%
Poor oral hygiene	9	4.5%
Domestic violation	2	1%
Psychiatric ailments	0	0%

Discussion

In our study, we found that 15% of the study population was married at less than 18 years of age [Figure 1]. According to

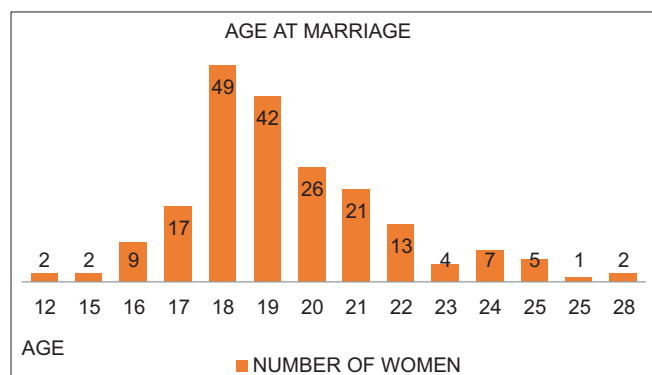


Figure 1: Age at marriage

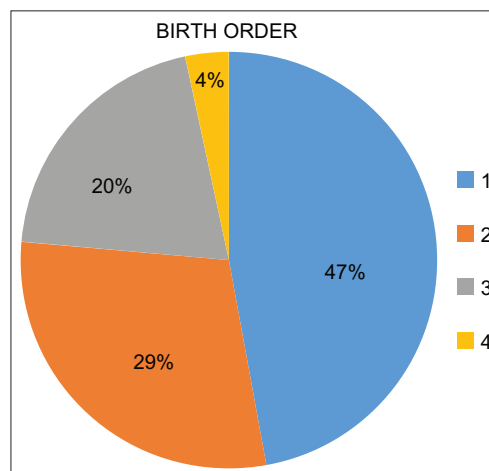


Figure 2: Birth order

international organizations recommend pregnancy spacing of at least 2–3 years, whereas recent studies supported by the United States Agency for International Development (USAID) have suggested that birth spacing of 3 to 5 years might be more advantageous in terms of reducing maternal and child mortality and for promoting health.^[6]

About 8% of women in our study had short stature with a height <145 cm. Short stature increases the risk of obstetric and perinatal complications and is an independent risk factor for caesarean section requirements.^[7]

Around 38% of women in the study were underweight, which increases the risk of perinatal complications [Table 1]. According to a study, 42.2% of Indian women are underweight before conception compared with 16.5% of their African counterparts.^[8] The obesity-related maternal risks during pregnancy include gestational diabetes and preeclampsia. The foetus is at risk for stillbirth and congenital anomalies, childhood obesity, and diabetes.^[9]

An alarming 63% of the women in our study were anaemic. In 2019, the prevalence of anaemia among reproductive age women in the world according to the WHO was 29.9%, whereas in India according to the NFHS-5, the prevalence in a similar group was 57%. According to the National target of Poshan Abhiyan, India is supposed to reduce the prevalence to 35% by 2022. The global target set by the WHO is to bring down the prevalence to 23% by 2025.^[10]

Folic acid deficiencies are known to be associated with neural tube defects (NTDs). Pre-conception folic acid supplementation helps reduce the incidence of such anomalies. In our study, 11% of females had received such supplements. These were mostly females with a previous history of abortions or babies with congenital anomalies. All women of reproductive age should get 400 micrograms (μg) of folic acid daily prophylactically, in addition to consuming food with folate, to help prevent NTDs. Women who have already had an NTD-affected pregnancy and are planning another pregnancy should consume 4,000 μg of folic acid each day beginning 1 month before becoming pregnant and through the first 3 months of pregnancy.^[11]

The incidence of systemic diseases in pregnancy was 3.5% in our study, which included 0.5% spondylitis, 1.5% hypertension, 0.5% breathlessness due to undiagnosed causes, and 1% tuberculosis. In the Choudhary S *et al.*'s study, the incidence of medical disorders was 12.24%. Hypertensive disorders in pregnancy were the commonest reported disorder (42.3%), followed by hematological disorders (38.7%), liver disorders (5%), endocrine disorders (4.8%), epilepsy (3.8%), and HIV (2.6%).^[12] The early detection and treatment of systemic diseases before planning pregnancy can help reduce adverse effects on maternal and child health.

The incidence of tobacco addiction in our study population was 3% [Table 2]. According to the American College of Obstetrician and Gynecologist (ACOG), smoking cessation in pregnancy is beneficial to the pregnant woman and her foetus, especially the cessation before 15 weeks of gestation.^[13] Pre-conception counselling and de-addiction advice can decrease adverse effects on maternal and foetal health.

About 4.5% of the study population had radiation or environmental toxin exposure (chemical fertilizers, pesticides) [Table 2]. At a radiation dose greater than 0.5 Gy, there can be severe foetal complications although there may not be immediate maternal health consequences. The health consequences can include growth restriction, malformations, impaired brain function, and cancer.^[14] PCC can help optimize the long-term and short-term health of the pregnant individual and the foetus by assessing for risks of toxic exposure and counselling about exposure reduction before pregnancy.

In our study, 4.5% of women had poor oral hygiene with a history of periodontitis or dental carries [Table 2]. According to a meta-analysis, the prevalence of periodontitis in pregnancy was 40%.^[15] Periodontitis has also been associated with poor pregnancy outcomes, including preterm birth and low birth weight.^[16]

Domestic violence was reported by 1% of the study population [Table 2]. Domestic violence can have an adverse impact on the pregnancy outcomes such as abortions, low birth weight, preterm delivery, and postpartum depression among others.^[17] The prevalence estimates of lifetime intimate partner violence range from 20% in the Western Pacific, 22% in high-income countries and Europe, and 25% in the WHO Regions of the Americas to 33% in the WHO African region, 31% in the WHO Eastern Mediterranean region, and 33% in the WHO South-East Asia region.^[18]

No females in our study had any psychiatric ailment and did not give the history of any psychiatric consultation [Table 2]. Jha S *et al.*, in their study, found that the prevalence of common mental disorders were 15.3% (95% confidence interval [CI], 12.0–18.6). Of these, major depression was 2.8% (95% CI, 1.4–4.4), and generalized anxiety disorder was 15.1% (95% CI, 11.8–18.4) as per the Mini International Neuropsychiatric Interview (MINI).^[19]

Nearly 3% of women in our study were on different prescriptions or over-the-counter medications before conception [Table 2]. According to the Center for Disease Control (CDC), almost 1 in 4 pregnant women and nearly half of the non-pregnant women between 15 and 44 years of age reported using prescription medicines in the last 30 days. About 9 in 10 women take at least one medicine during pregnancy, and 7 in 10 take at least one prescription medicine.^[20] If PCC is sought, clinicians can make necessary changes in the medications received by the female planning to conceive to reduce their adverse effects on maternal and foetal health.

Also, 3.5% of our study population had systemic diseases such as hypotension, hypertension, spondylitis, tuberculosis, and undiagnosed breathlessness. Diabetes in pregnancy increases the risk of congenital malformations and stillbirths, whereas chronic hypertension is associated with preterm births. Diagnosis and initiation of treatment for such systemic diseases before conception can help improve pregnancy outcomes. Data from high-income countries indicate that gestational diabetes complicates approximately 5% to 7% of pregnancies, whereas in India, the condition affects as many as 5 million women annually.^[21] The prevalence of hypertension in pregnancy was found to be 6.9%.^[22]

Conclusion

From our study, we conclude that presently, the status of pre-conception care is meagre. Women who are not in adequate health and have risk factors that can adversely affect pregnancy outcomes are identified late in pregnancy when nothing much can be done. Considering the positive effects of evidence-based interventions before pregnancy, it is important to include the pre-conception period in the maternal care package.

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Conflicts of interest

There are no conflicts of interest.

References

1. Pimple YV, Ashturkar MD. Preconception care: An Indian context. *Int J Community Med Public Health* 2016;3:3291-6.
2. Doke PP, Gothankar JS, Pore PD, Palkar SH, Chutke AP, Patil AV, *et al.* Meager perception of preconception care among women desiring pregnancy in rural areas: A qualitative study using focus group discussions. *Front Public Health* 2021;9:689820.
3. Steel A, Lucke J, Adams J. The prevalence and nature of the use of preconception services by women with chronic health conditions: An integrative review. *BMC Women's Health* 2015;15:14.
4. Shadab P, Nekuei N, Yadegarfar G. The prevalence of preconception care, its relation with recipients' individuality, fertility, and the causes of lack of checkup in women who gave birth in Isfahan hospitals in 2016. *J Educ Health Promot* 2017;6:88.
5. Singh S, Shekhar C, Acharya R, Moore AM, Stillman M, Pradhan MR, *et al.* The incidence of abortion and unintended pregnancy in India, 2015. *Lancet Glob Health* 2018;6:e111-20.
6. World Health Organization. (2007). Report of a WHO technical consultation on birth spacing: Geneva, Switzerland 13-15 June 2005. World Health Organization. Available on: <https://apps.who.int/iris/handle/10665/69855>.
7. Sheiner E, Levy A, Katz M, Mazor M. Short stature-An independent risk factor for Cesarean delivery. *Eur J Obstet Gynecol Reprod Biol* 2005;120:175-8.
8. Coffey D. Pre-pregnancy body mass and weight gain during pregnancy in India and sub-Saharan Africa. *Proc Natl Acad Sci U S A* 2015;112:3302-7.
9. Meaghan AL, Michael LP, Jay S. The impact of maternal obesity on maternal and fetal health. *Rev Obstet Gynecol* 2008;1:170-8.
10. Belwal E, Pandey S, Sarkar S. Anemia prevalence in India over two decades: Evidence from national family health survey (NFHS). *Int J Sci Healthcare Res* 2021;6:335-40.
11. Morbidity and Mortality Weekly Report, Centers for Disease Control and Prevention, September 11, 1992, 41(RR-14);001.
12. Chaudhary S, Singhal SR, Chauhan MB, Gupta A, Dalal M. Study of medical disorders in pregnancy among in patients at a tertiary care hospital in Haryana, India. *Int J Reprod Contracept Obstet Gynecol* 2019;8:3770-3.
13. Committee on Obstetric Practice, Tobacco and Nicotine Cessation During Pregnancy, ACOG Committee Opinion, May 2020;135:221-9.
14. Radiation and Pregnancy: Information for Clinicians, National Center for Environmental Health Agency for Toxic Substances and Disease Registry, April 2019. Available on: <https://www.cdc.gov/nceh/radiation/emergencies/prenatalphysician.htm#:~:text=Depending%20on%20the%20stage%20of,impaired%20brain%20function%2C%20and%20cancer>.
15. Chen P, Hong F, Yu X. Prevalence of periodontal disease in pregnancy: A systematic review and meta-analysis. *J Dent* 2022;125:104253.
16. Corbella S, Taschieri S, Del Fabbro M, Francetti L, Weinstein R, Ferrazzi E. Adverse pregnancy outcomes and periodontitis: A systematic review and meta-analysis exploring potential association. *Quintessence Int* 2016;47:193-204.
17. Eman AEH, Amany A, Abeer ME. Effect of Domestic Violence on Pregnancy Outcomes among Rural and Urban Women. *IOSR Journal of Nursing and Health Sciences*, e-ISSN: 2320-1959. p- ISSN: 2320-1940, 9 (3) Ver. II (May.-June. 2017), PP 35-42.
18. World Health Organisation, Violence against women. Available on -<https://www.who.int/news-room/fact-sheets/detail/violence-against-women>
19. Jha S, Salve HR, Goswami K, Sagar R, Kant S. Prevalence of common mental disorders among pregnant women-evidence from population-based study in rural Haryana, India. *J Family Med Prim Care* 2021;10:2319-24.
20. Treating for Two; Medicine and Pregnancy, Centers for Disease Control and Prevention. Available on-<https://www.cdc.gov/https://www.cdc.gov/pregnancy/meds/>

- treatingfortwo/research.html.
21. Swaminathan G, Swaminathan A, Corsi DJ. Prevalence of gestational diabetes in India by individual socioeconomic, demographic, and clinical factors. *JAMA Netw Open* 2020;3:e2025074.
 22. Mehta B, Kumar V, Chawla S, Sachdeva S, Mahopatra D. Hypertension in pregnancy: A community-based study. *Indian J Community Med* 2015;40:273-8.