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Effect of Women's Empowerment on Immediate Postpartum Family Planning Utilization in Ethiopia: A Prospective Cohort Study

Gudina Desalegn Kapiye

gudinadesalegn12@gmail.com

Arsi University

Hinsermu Bayu Abdi

Arsi University

Getu Megersa Gemeda

Arsi University

Obsa Abebe Bekele

Arsi University

Beka Furi Keno

Arsi University

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Abstract

Background

Immediate postpartum family planning provides an important opportunity to prevent unintended and closely spaced pregnancies and their associated maternal and neonatal risks. Women's empowerment may influence women's ability to make and act on reproductive health decisions. However, evidence on the effect of women's empowerment on immediate postpartum family planning utilization is limited, particularly in Ethiopia.

Objective

To assess the effect of women's empowerment on immediate postpartum family planning utilization in Ethiopia.

Methods

A facility-based prospective cohort study was conducted in selected public hospitals of Arsi Zone from April to June/2026. The study included 212 study participants: 72 in the exposed group and 140 in the non-exposed group. Participants were selected using a systematic random sampling technique. Data were collected using a structured interviewer-administered questionnaire and data extraction checklist. Data were analyzed using STATA version 17. A modified Poisson regression with robust variance was used to estimate adjusted risk ratios (aRRs) with 95% confidence intervals (CIs). Statistical significance was declared at a p-value < 0.05. Finally, the findings were presented using figures, tables, and text.

Results

Empowered women had a higher likelihood of utilizing immediate postpartum family planning compared with not-empowered women (aRR 2.37, 95% CI; 1.59, 3.52) after adjusting for potential confounding variables. Women's empowerment was not significantly associated with contraceptive method selection.

Conclusion

Women's empowerment was independently associated with immediate postpartum family planning utilization. Strengthening women's participation in reproductive health decision-making may contribute to increased uptake of immediate postpartum family planning. Healthcare providers should support women's informed participation in decisions regarding immediate postpartum contraceptive use.

Introduction

Family planning (FP) refers to the ability of individuals and couples to plan and attain desired numbers of children and the intervals between their births, using contraceptive methods (1). Postpartum family planning is defined as preventing unintended and closely spaced pregnancies during the first 12 months following childbirth (2, 3). It plays a vital role in delivering health care to women immediately after birth and during the first year postpartum (2). Immediate postpartum family planning (IPPFP) is defined as providing FP services to women within 48 hours after childbirth (4). It is aimed at preventing unintended and closely spaced pregnancies during the first 24 months (5).

Women's empowerment has been identified as a public health determinant. It has been conceptually defined in different ways by different scholars. One widely used definition is by Naila Kabeer as a process by which women acquire the ability to make strategic life choices in a context where this ability was previously denied them through agency, resources, and achievement (6). Empowered women are more likely to utilize health services (7–9).

The issues of reproductive and maternal health are highly prioritized by the global community through global commitments such as the Sustainable Development Goals (SDGs) (10). Ethiopia has adopted and implemented various national policies and strategies in line with global goals to achieve improvements in reproductive and maternal health indicators. The Health Sector Transformation Plan (HSTP II) specifically prioritizes expanding coverage and quality of reproductive and maternal health care (11).

Despite a declining trend in maternal mortality in recent years, women still die from preventable causes of pregnancy and childbirth-related factors. A report from the World Health Organization (WHO), about 260,000 women died in the world due to pregnancy-related causes in 2023 and 70% of these were in Sub-Saharan Africa (12, 13). About 30% of all global maternal deaths were because of unsafe contraceptive use (4). In Ethiopia, maternal mortality also remains high, with an estimated maternal mortality ratio of 141 per 100,000 live births (14).

Women empowerment and reproductive health are the key indicators of SDGs (10). The lack of women's empowerment is one of the most serious contributing factors to preventable high maternal mortality and morbidity (15). Low women empowerment is an obstacle to the use of reproductive health services (16). Improving women's empowerment is associated with an increase in contraceptive use (17). Women's empowerment is the focus of SDG-5 for this reason(18).

The potential risks of not practicing IPPFP, unintended and closely spaced pregnancies, are risk factors for maternal and newborn health. Mothers are more prone to anemia, miscarriage, abortion, puerperal endometritis, premature rupture of membranes, and possible maternal death. The potential risks for the newborn are prematurity, low birth weight, stillbirth, and probable newborn death. 20% of obstetrical death is related to a short inter-birth interval (17, 19).

Previous studies had investigated independent factors that were associated with IPPFP utilization. However, the effect of women's empowerment on IPPFP utilization has not been well explored using

robust design such as cohort study (4, 20, 21). Therefore, this study intends to assess the effect of women's empowerment on immediate postpartum family planning utilization.

Methods and materials

Study setting and period

This study was conducted in selected public hospitals of Arsi Zone (Asella Referral and Teaching Hospital, Tokuma Asella Primary Hospital, and Bekoji Primary Hospital), from April to June/2026. Arsi zone is located in the Oromia Regional State of Ethiopia. The capital town of the zone is Asella, 175 km from Addis Ababa. In the zone, there were ten public hospitals, including one referral and teaching hospital, two general hospitals, and seven primary hospitals. In addition, 107 public health centers, two private hospitals, and 316 medium-and lower-level private clinics (22).

Study design and population

A facility-based prospective cohort study was employed. All married term pregnant women attended antenatal care (ANC) services at selected public hospitals in Arsi Zone during the study period. The classification of exposed and non-exposed status was based on the composite analysis of adapted SWPER domains.

Exposed – Empowered women.

Non-exposed – Not empowered women.

Sample size determination and sampling technique

The sample size was calculated using StatCalc of Epi-Info version 7.2.3.1 for a cohort study with assumptions of 80% power of the study, 95% alpha value, and a 1:1 unexposed to exposed ratio. The percentage of outcome among the unexposed was assumed to be 50% and a risk ratio of 1.4 was assumed (since no previous study has directly assessed the effect of women's empowerment on IPPFP utilization, the sample size is determined using conservative assumptions). The calculated sample size was 208. After adding a 10% for a possible loss to follow-up, the final sample size was ~ 229. Out of 229 study participants, 79 were empowered women (the exposed group) and the remaining 150 were not-empowered women (the non-exposed group). The study units were selected by systematic random sampling technique. The total sample size of 229 was then proportionally allocated to the selected public hospitals. (Fig. 1).

Asella	Tokuma	Bekoji	Kersa	Gobessa	Abomsa	Sude	Bale	Arsi Robe	Robe Didaa

Simple random sampling with lottery method

Operational definitions

Immediate postpartum family planning utilization

Women who used any one of modern contraceptive methods within 48 hours after childbirth (4).

Measurement of women's empowerment: Was measured by using adapted SWPER domains. It has three domains: justification of wife beating, decision-making, and social independence. Term pregnant women who scored greater than or equal to the recommended mean in each domain were considered as **'Empowered'**, otherwise **'Not empowered'** (23).

Data collection tool and procedures

Structured interviewer-administered questionnaire and data extraction checklists were used to collect the data via KoboToolbox. The tool for measuring women's empowerment was adapted from SWPER domains, which was validated by DHS (23). The tool for measuring socio-demographic characteristics, reproductive history, and family planning-related factors was adapted from previous similar studies (6, 24). Three BSc Midwives as data collectors and one MSc Midwife supervisor were employed outside their catchment area for data collection at ANC clinics of the selected public hospitals. Both groups were followed for eight weeks, from 37 weeks of gestation to 48 hours of delivery through face-to-face, phone calls, and data extraction from delivery records of the women.

Data quality assurance

To maintain the quality of data, the questionnaire was prepared first in English, and then translated into the local language (Afan Oromo) and then back into English by an expert to ensure its consistency. Before the actual data collection, a pre-test was conducted on 5% (11 mothers who fulfilled eligibility criteria). During data collection, the process was closely followed by the principal investigator and supervisor. The collected questionnaires were checked for completeness and consistency daily by the principal investigator and supervisor, and then timely corrections were made.

Data analysis and processing

The collected data were exported into STATA version 17 for analysis. Then, further data cleaning and recoding were carried out before statistical procedures were performed. Principal component analysis (PCA) was computed for each domain of women's empowerment. Both descriptive statistics and analytical analysis were computed. Multicollinearity was checked by collinearity diagnostic statistics via variance inflation factors (VIF) with a maximum value of 1.365 and a tolerance test with a minimum

value of 0.733. Modified Poisson regression models with robust variance were done to determine relative risk, because the outcome was common (> 10%), odds ratios from logistic regression were probable to overestimate the effect.

The strength of association was presented using the Adjusted Risk Ratios (aRRs) with a 95% confidence interval (CI), and statistical significance was declared at p-value of < 0.05. The regression model fitness was checked using deviance and Pearson χ^2 goodness-of-fit tests and was well-fitted.

Results

A total of 229 married-term pregnant women were enrolled. 212 participants were included in the final analysis, which makes a 92.6% response rate (n=212, with 72 of empowered women and 140 of not-empowered women). The number of lost to follow-up was 17(7.4%), with the reasons including referral or transfer to other health facilities and change of residence. Attrition analysis indicated no statistically significant differences in baseline characteristics (all p>0.05), showing a low risk of attrition bias.

Socio-demographic characteristics of respondents

The mean and standard deviation ages of empowered and not-empowered women were 28.06±5.31 years and 27.75±6.05 years respectively, with an age range of 17–42 years. About 54(75.00%) of empowered women and 98(70.00%) of not-empowered women were from urban areas. Regarding to status of mother's education, most empowered women and not-empowered women were elementary completed and their occupation were house wife. (**Table 1**).

Table 1: Socio-demographic frequency distribution of empowered and not-empowered women who attend antenatal care at selected public hospitals in Arsi Zone, Ethiopia

	Women's empowerment status		P-value
Variables	**Empowered women (n=72)**	**Not-empowered women (n=140)**	
	Frequency (%)	**Frequency (%)**	
Age of respondents in years			0.095
≤19	4(5.56%)	22(15.71%)	
20-34	55(76.39%)	98(70.00%)	
≥35	13(18.06%)	20(14.29%)	
Total	72(100.00%)	140(100.00%)	
Mean age (±SD) in years	28.06±5.31	27.75±6.05	0.6442
Residence			0.001
Rural	18(25.00%)	42(30.00%)	
Urban	54(75.00%)	98(70.00%)	
Total	72(100.00%)	140(100.00%)	
Mother's educational status			0.001
No formal education	1(1.39%)	23(16.43%)	
Primary school	27(37.50%)	54(38.57%)	
Secondary school	25(34.72%)	48(34.29%)	
College and above	19(26.39%)	15(10.71%)	
Total	72(100.00%)	140(100.00%)	
Husband's educational status			0.003
No formal education	1(1.39%)	15(10.71%)	
Primary school	15(20.83%)	36(25.71%)	
Secondary school	24(33.33%)	57(40.71%)	
College and above	32(44.44%)	32(22.86%)	
Total	72(100.00%)	140(100.00%)	
Occupational status of mother's			0.001
House wife	23(31.94%)	81(56.86%)	

Merchant	8(11.11%)	24(17.14%)	
Self-employee	14(19.45%)	14(10.00%)	
Government employee	21(29.17%)	17(12.14%)	
Student	6(8.33%)	4(2.86%)	
Total	72(100.00%)	140(100.00%)	
Mother's monthly income			0.001
<3000 ETB	7(9.72%)	53(37.86%)	
3000-4500 ETB	3(4.17%)	2(1.43%)	
4501-6000 ETB	21(29.17%)	30(21.43%)	
>6001 ETB	41(56.94%)	55(39.29%)	
Total	72(100.00%)	140(100.00%)	

Reproductive history and family planning-related characteristics of respondents

Among term-pregnant women who attended selected public hospitals of Arsi zone, about 56(77.78%) of empowered women and 76(54.29%) of not-empowered women were early initiated to ANC follow-up. In relation to parity, 43(59.72%) of empowered women and 94(67.14%) of not-empowered women were multipara. Regarding the study participants' previous use of the modern family planning method, 43(59.72%) of empowered women and 66(52.14%) of not-empowered women had previously used the modern family planning method. (**Table 2**).

Table 2: Reproductive history and family planning-related characteristics of empowered and not-empowered women who attend antenatal care at selected public hospitals in Arsi Zone, Ethiopia

	Women's empowerment status		P-value
Variables	**Empowered women(n=72)**	**Not-empowered women (n=140)**	
	Frequency (%)	**Frequency (%)**	
Parity			0.501
Nulliparous	11(15.28%)	20(14.29%)	
Primiparous	18(25.00%)	26(18.57%)	
Multiparous	43(59.72%)	94(67.14%)	
Total	72(100.00%)	140(100.00%)	
Pregnancy intention			0.012
Planned	57(79.17%)	87(62.14%)	
Unplanned	15(20.83%)	53(37.86%)	
Total	72(100.00%)	140(100.00%)	
Timely ANC booking			0.001
Yes	56(77.78%)	76(54.29%)	
No	16(22.22%)	64(45.71%)	
Total	72(100.00%)	140(100.00%)	
Ever used modern FP method			0.083
Yes	43(59.72%)	66(47.14%)	
No	29(40.28%)	74(52.86%)	
Total	72(100.00%)	140(100.00%)	

Comparison of immediate postpartum family planning utilization

Utilization of IPPFP method was higher among empowered women 45(62.50%) compared with not-empowered women 32(22.85%), a difference of 39.65% points. (**Figure 2**)

Among IPPFP users, 15(33.33%) of empowered women and 11(34.37%) of not-empowered women were using intra-uterine contraceptive devices, and 22(48.88%) of empowered women and 16(50.0%) of not-empowered women were using implants during the first 48 hours after delivery. The most commonly

used contraceptive was implant 38(49.35%), followed by IUCDs 26(33.76%). Implants and IUCDs may have been chosen due to their high effectiveness, long duration of action, convenience, and suitability for immediate postpartum use without affecting breastfeeding. The distribution of IPPFP methods didn't differ significantly between empowered and not-empowered women (Pearson χ^2 (3) = 0.493, p = 0.920), indicating that women's empowerment status was not significantly associated with the type of contraceptive method chosen. (**Figure 3**).

Effect of women's empowerment on immediate postpartum family planning utilization

In a bivariate modified Poisson regression analysis, women's empowerment, age of respondents, place of residence, mother's occupational status, mother's monthly income, parity, pregnancy intention, and ever-used modern FP method were significantly associated with IPPFP utilization at $p < 0.25$. After controlling for potential confounding variables, empowered women had 2.37 times higher likelihood of utilizing IPPFP compared with not empowered women (aRR 2.37, 95% CI; 1.59, 3.52). Age of respondents, merchant categories of mother's occupational status, 4501-6000 ETB categories of mother's monthly income, and parity also remained significantly associated with utilization of IPPFP. (**Table 3**).

Table 3: Bivariate and multivariate analysis of modified Poisson regression with robust variance on the effect of women's empowerment on immediate postpartum family planning utilization in Arsi Zone selected public hospitals, Ethiopia

Variables	Used modern IPPFP		Unadjusted RR (95%CI)	Adjusted RR (95%CI)	P-value
	Yes (%)	No (%)			
Women's empowerment					
Not- empowered	32(22.86%)	108(77.14%)	1	1	1
Empowered	45(62.50%)	27(37.50%)	2.73(1.91, 3.89)*	2.37(1.59, 3.52)**	0.001
Total	77(36.32%)	135(63.68%)			
Age of respondents in years					
≤19	4(15.38%)	22(84.62%)	1	1	1
20-34	56(36.60%)	97(63.40%)	2.37(0.94, 6.01)*	1.92(1.02, 3.62)**	0.042
≥35	17(51.52%)	16(48.48%)	3.34(1.27, 8.76)*	3.26(1.55, 6.86)**	0.002
Total	77(36.32%)	135(63.68%)			
Residence					
Rural	11(22.45%)	38(77.55%)	1	1	1
Urban	66(40.49%)	97(59.51%)	1.8(1.03, 3.13)*	1.04(0.60, 1.82)	0.871
Total	77(36.32%)	135(63.68%)			
Mother's occupational status					
House wife	27(25.96%)	77(74.04%)	1	1	1
Merchant	16(50.00%)	16(50.00%)	1.92(1.19, 2.74)*	1.67(1.05, 2.67)**	0.029
Self-employee	14(50.00%)	14(50.00%)	1.92(1.17, 3.15)*	1.62(0.96, 2.71)	0.065
Government employee	16(42.11%)	22(57.89%)	1.62(0.98, 2.66)*	1.17(0.74, 1.85)	0.481
Student	4(40.00%)	6(60.00%)	1.54(.67, 3.52)	0.72(0.37, 1.41)	0.351
Total	77(36.32%)	135(63.68%)			
Mother's monthly income					
<3000 ETB	14(23.33%)	46(76.67%)	1	1	1

3000-4500 ETB	2(40.00%)	3(60.00%)	1.7(0.53, 5.52)	0.78(0.24, 2.56)	0.695
4501-6000 ETB	26(50.98%)	25(49.02%)	2.18(1.28, 3.72)*	1.85(1.03, 3.30)**	0.037
>6001 ETB	35(36.46%)	61(63.54%)	1.56(0.91, 2.65)*	1.12(0.65, 1.92)	0.679
Total	77(36.32%)	135(63.68%)			
Parity					
Nulliparous	5(16.13%)	26(83.87%)	1	1	1
Primiparous	18(40.91%)	26(59.09%)	2.53(1.05, 6.11)*	2.60(1.04, 6.49)**	0.041
Multiparous	54(39.42%)	83(60.58%)	2.44(1.06, 5.61)*	2.67(1.30, 6.35)**	0.026
Total	77(36.32%)	126(63.68%)			
Pregnancy intention					
Unplanned	18(26.47%)	50(73.53%)	1	1	1
Planned	59(40.97%)	85(59.03%)	1.54(0.99, 2.4)*	1.36(0.83, 2.22)	0.213
Total	77(36.32%)	135(63.68%)			
Ever used modern FP method					
Yes	48(44.04%)	61(55.96%)	1.56(1.07, 2.27)*	1.08(0.71, 1.64)	0.697
No	29(28.16%)	74(71.84%)	1	1	1
Total	77(36.32%)	135(63.68%)			

1-reference category, *P-value < 0.25 in bivariate, **Significant at p-value < 0.05 in multivariate, CI-confidence interval

Discussion

This prospective cohort study was carried out to assess the effect of women's empowerment on IPPFP utilization among women who attend antenatal care in Arsi Zone selected public hospitals. The results demonstrate that women's empowerment was significantly associated with IPPFP utilization. After adjusting for potential confounding variables, empowered women had 2.37 times higher likelihood of utilizing IPPFP than not-empowered women.

This finding is in line with a community-based cross-sectional study in Gurage Zone, Ethiopia, which showed that women with higher empowerment were more likely to use IPPFP than those with lesser empowerment. It is also consistent with a study done in Jimma Zone, Ethiopia, which reported that women with greater household decision-making power were more likely to use family planning methods. Related findings have been reported in other African countries. Studies from Burkina Faso and Tanzania showed that women's empowerment, particularly decision-making independence, was significantly associated with the use of modern contraceptives. Similarly, a multilevel analysis conducted in 32 SSA countries reported that empowered women had higher contraceptive use compared to less empowered women (17, 19, 25–27). These consistencies indicate that irrespective of location, women's ability to participate in reproductive health and household decisions has a positive influence on contraceptive uptake.

The finding is also supported by international evidence. Studies conducted in Cambodia and Bangladesh reported that women's empowerment, mainly decision-making power, was associated with increased contraceptive uptake. In addition, a systematic review and meta-analysis involving 40 studies found that empowerment interventions significantly improved contraceptive use (28–30). The consistency between the present study and international findings may indicate that empowerment is a universal factor influencing reproductive health behaviors across different cultural and socioeconomic contexts.

The possible explanation for this is empowered women may have higher self-esteem and the power to make decisions about themselves in the family, especially about reproductive health. Women involved in household decision-making are more likely to discuss family planning with their spouse, consult with a health care professional, and take time to make a good choice about their contraception after delivery, than those with less advantaged decision-making power. Empowered women also have improved access to health information and services, which increases the chance that they will make use of IPPFP. Moreover, they may feel more comfortable communicating and acting upon their fertility preferences without being totally dependent on other people.

An additional important finding of this study was that the individual contraceptive preference did not vary between empowered or not-empowered women. Implants were the most used contraceptive method, followed by IUCDs and empowerment status was not a predictor of contraceptive choice. Related results from some family planning studies have found that there was a positive correlation between woman empowerment and contraceptive uptake; while there was no definitive conclusion to an association between empowerment and specific contraceptive choice (25). This suggests that empowerment mainly influences the utilization IPPFP rather than the selection of a specific method. The findings on contraceptive preferences may be associated with factors such as their high efficacy, long duration of effect, lack of interference with daily life activity, convenience and being initiated immediately following delivery in the hospital.

Limitations of the study

The study was conducted at selected public hospitals. Thus, the findings may not be applicable to other populations and settings. Since only married women participated in the study, the application of the results may not extend to women with other statuses, such as single, divorced or widowed. There might also be residual confounding from unmeasured factors such as cultural beliefs, partner influence and family support.

Conclusion

This prospective cohort study showed that women's empowerment was independently associated with utilization of IPPFP. Empowered women had a higher likelihood of utilizing IPPFP. However, women's empowerment status was not associated with contraceptive method selection. Healthcare providers should encourage a woman to take ownership in her decision to use an immediate postpartum contraceptive method. Policymakers in strategies to increase IPPFP use can include approaches to enhance the empowerment of women in decision-making around contraceptive use.

Abbreviations

ANC	**Antenatal Care**
ARR	**Adjusted Risk Ratio**
CI	Confidence Interval
DHS	Demographic and Health Survey
FP	Family Planning
IPPFP	Immediate Postpartum Family Planning
LMICs	Low- and Middle-Income Countries
SDGs	Sustainable Development Goals
SSA	Sub-Saharan Africa
SWPER	Survey-based Women’s empowerment Index
VIF	Variance Inflation Factor
WHO	World Health Organization

Declarations

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Authors’ contributions

GDK designed the study, conducted the research, analyzed the data, and prepared the main manuscript. HBA and GMG supervised the study and critically reviewed and revised the manuscript. OAB and BFK

participated in the data analysis and prepared the draft manuscript. All Authors' read and approved the final manuscript.

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Data availability

The datasets generated and analyzed for this study are not publicly available due to confidentiality issues but available from the corresponding author on reasonable request.

Ethics approval and consent to participate

An official letter on ethical clearance was obtained from the Institutional Review Board (IRB) of Arsi University, College of Health Sciences (R. No: A/U/H/S/C/120/13723/18). A formal letter of permission was obtained from Arsi University, College of Health Sciences to Asella Referral and Teaching Hospital, Tokuma Asella Primary Hospital, and Bekoji Primary Hospital to allow the execution of the research. Detailed information and the objective of the study were explained to the participants, including the procedure, benefits, and risks of the study. We obtained informed consent from all study subjects. This study was conducted in accordance with the Declaration of Helsinki.

Consent for Publication

Not applicable.

Competing of interests

The authors declare that have no competing interests.

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Figures

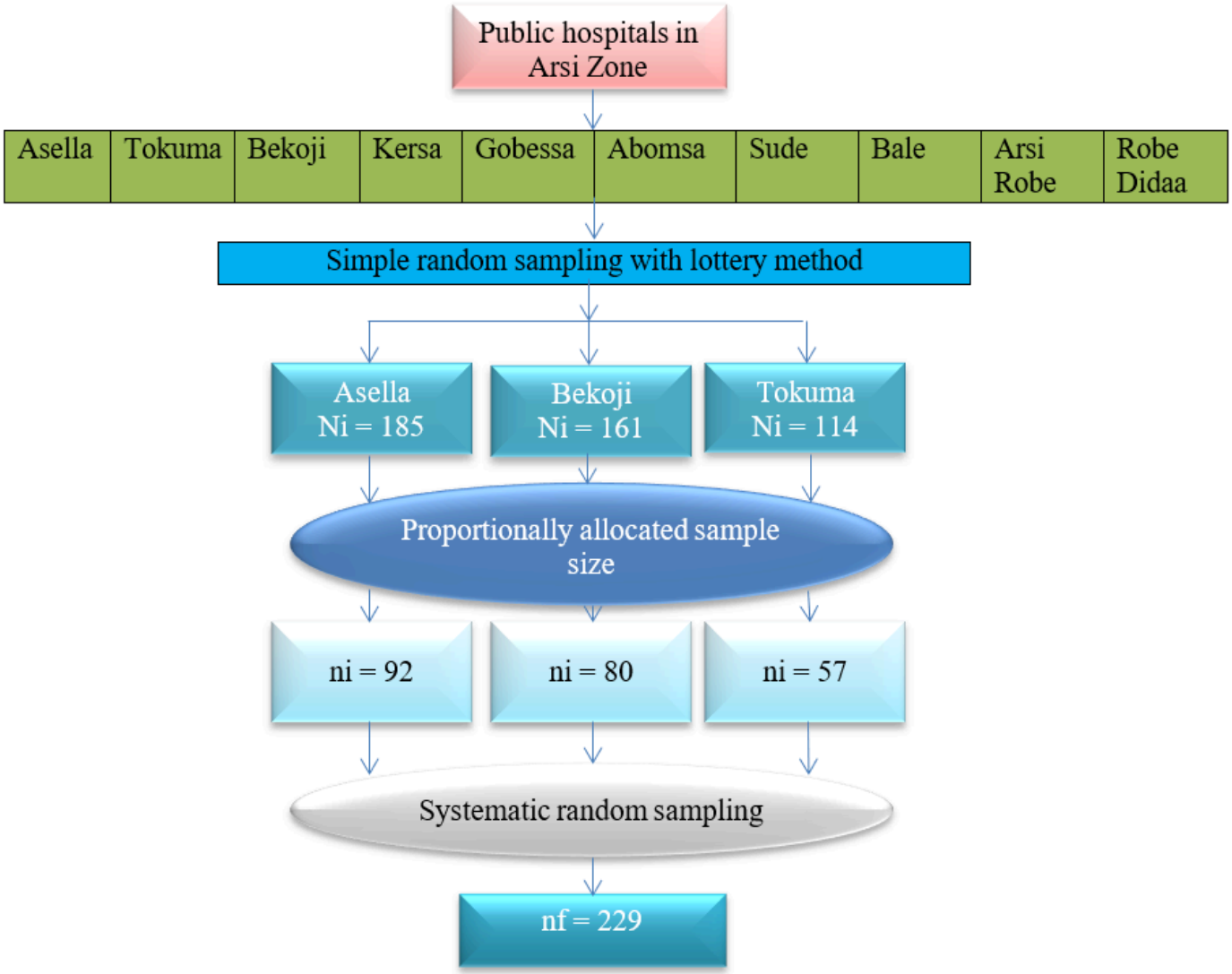


Figure 1

Schematic representation of sampling procedure on the effect of women's empowerment on immediate postpartum family planning utilization among women who attend antenatal care at selected public hospitals in Arsi Zone, Ethiopia

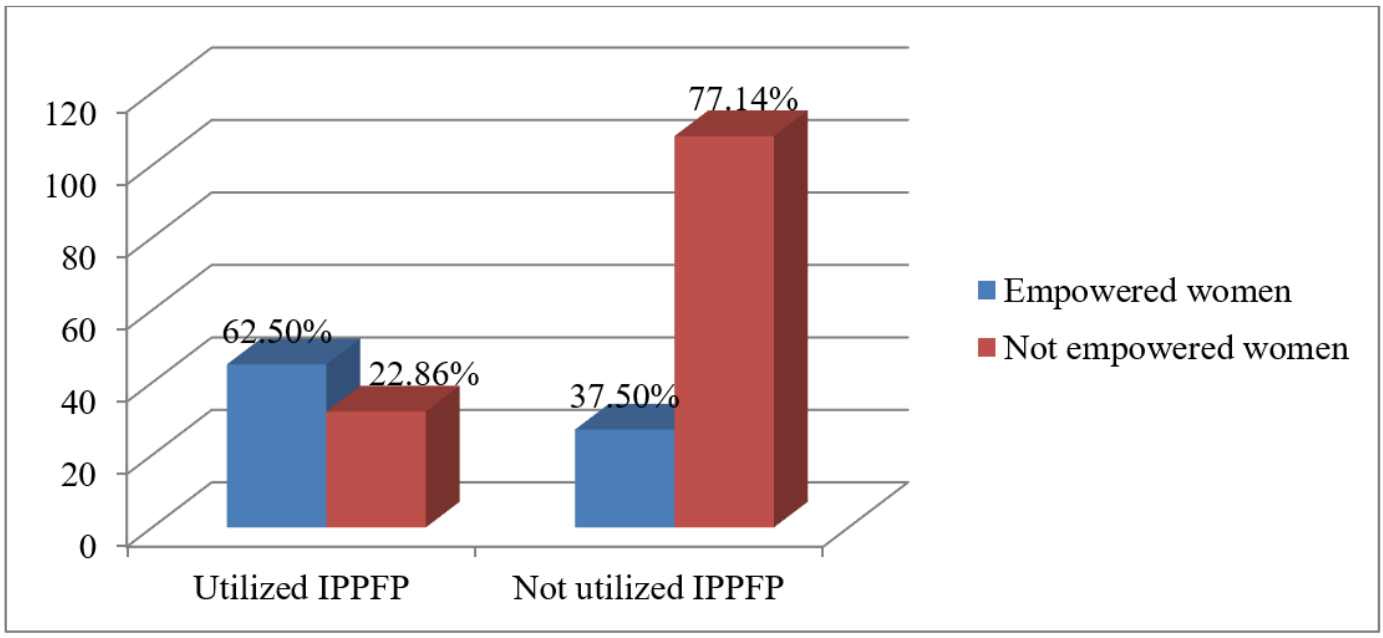


Figure 2

Immediate postpartum family planning utilization among empowered women and not- empowered women who attend antenatal care at selected public hospitals in Arsi Zone, Ethiopia

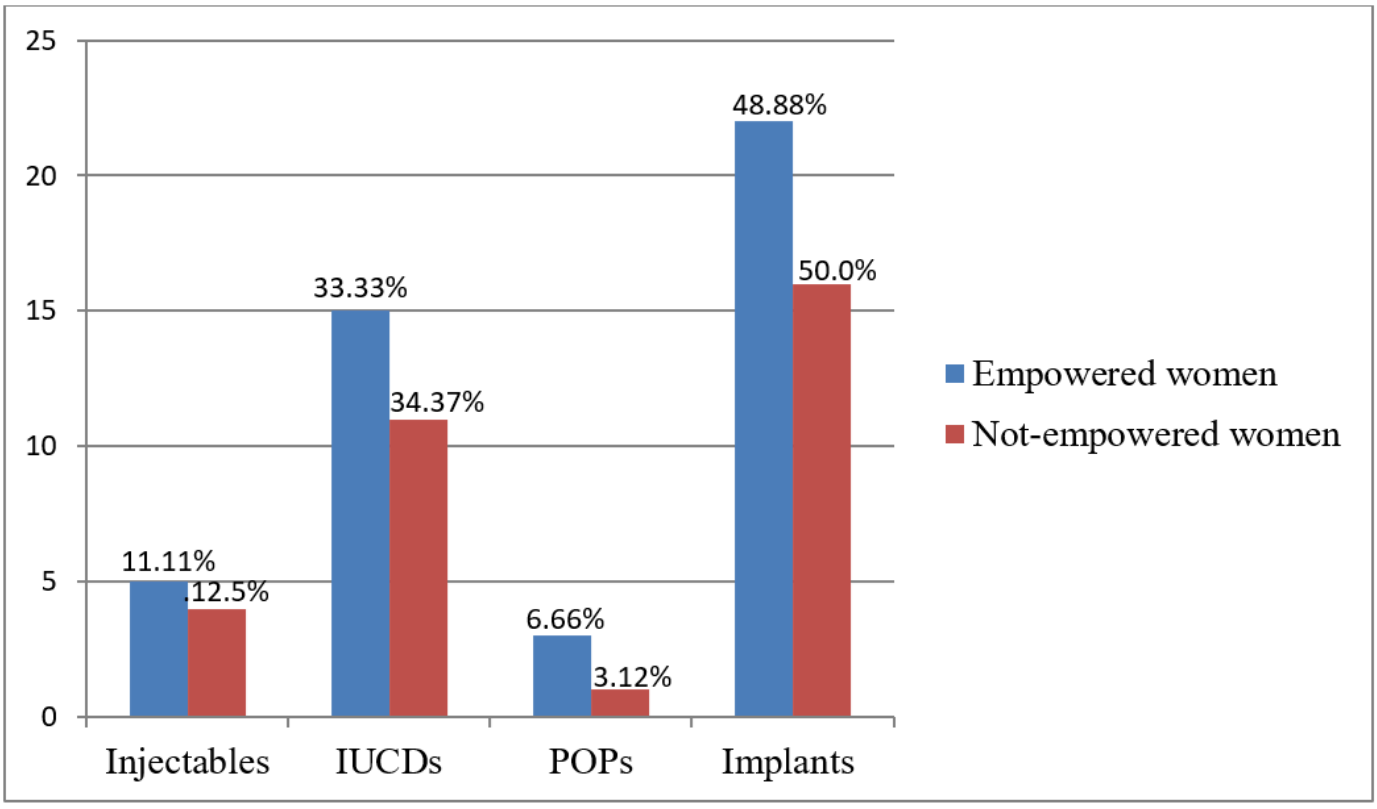


Figure 3

Types of modern family planning methods used during immediate postpartum among empowered women and not-empowered women who attend antenatal care at selected public hospitals in Arsi Zone, Ethiopia

Keynote: IUCDs-Intra-uterine contraceptive devices, POPs-progestin-only pills

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- DataCollectionTool.docx