IUSSP 2021 Extended Abstract — Theme: Family Planning and Contraception

Title: Estimating contraceptive needs in the postpartum period: A longitudinal comparison of six measures of unmet need and demand for contraception among women in Ethiopia

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Abstract
This longitudinal study aimed to measure unmet need and demand for contraception among postpartum women in Ethiopia using nationally representative, longitudinal data collected from 2019-2021. We conduct analyses of women 0-6 and 7-12 months postpartum to estimate the prevalence of unmet need and demand for contraception across six distinct approaches to account for women's pregnancy preferences and postpartum circumstances. Results indicate significant variation in unmet need among women 0-6 months postpartum, ranging from 23.9% (CI: 21.5-26.4) via the *classic/intermediate* definitions to nearly one-half of women (44.8% (CI: 41.6-48.1)) via the *prospective* definition; 52.4% had an unmet demand for contraception. Differences between indicators grew among women 0-7 months postpartum, ranging from 3.8% (CI:2.8-5.2) following the *retrospective current status* definition to 21.8% (CI:18.7-25.3) using the *intermediate* definition; 38.3% had an unmet demand for contraception. Unmet need is a widely used indicator for evaluating the impact of contraceptive programs, yet our preliminary results show that estimates among postpartum women vary significantly based on the measure used and the timing postpartum women are surveyed. Such variability has important implications for family planning policies and programs. Future analysis will explore shifts in need and demand for contraception over time and according to women's characteristics.

Background
Unmet need for contraception is a key indicator used by family planning programs to evaluate progress towards meeting women's demand for contraception. An analysis of 27 countries using data from Demographic and Health Surveys (DHS) showed a vast majority of women between 0-12 months postpartum wanted to avoid having another child within two years, yet around two-thirds were not using contraception; only about 40% of those not using a method intended to do so within 12 months [1,2]. The WHO recommends women wait 24 months after birth before trying to conceive again, as short interpregnancy intervals are associated with heightened risks of maternal and neonatal morbidity and mortality [3]. Improving access to contraception in the early postpartum period has been increasingly recognized as a key strategy for reducing unintended and short interval pregnancy, while supporting women to achieve their reproductive goals [4,5].

Despite the relevance of unmet need for understanding women's potential risk of unintended pregnancy after childbirth and identifying gaps in contraceptive coverage, measurement of postpartum unmet need has proved challenging. Research has been largely limited to cross-sectional data, restricting temporal assessments of unmet need dynamics in the postpartum period, and has been constrained by a lack of agreement about whether to account for women's current versus potential pregnancy risks and their retrospective versus prospective fertility intentions [6–9]. Further, estimates of unmet need may also incorrectly assume concordance between women's fertility intentions and their desires to use contraception. Instead, Moreau and colleagues (2019) propose a measure coined "unmet demand"—identifying women at risk of unintended pregnancy based on their need for and interests to use contraception—to function as a complementary measure to unmet need, given its ability to distinguish women who desire, but are not using, contraceptive services [9].

Comparing definitions of postpartum unmet need for contraception are complicated by substantial variation across measures. For example, the *classic* definition, historically used by the DHS, defines women as having an unmet need according to their retrospective pregnancy intentions,

amenorrheic women 0-24 months postpartum whose last birth was unintended, and who are not using contraception, are classified as having an unmet need [7]. Critics contend this definition may underestimate unmet need among women whose last birth was intended but who want to limit or space childbearing for at least two years (i.e. categorized as having no unmet need), while also overestimating unmet need among women practicing the lactational amenorrhea method (LAM) and/or abstaining from sex, or who wish to become pregnant, who have a reduced risk of unintended pregnancy (i.e. categorized as having an unmet need) [8].

Scholars have recently proposed alternatives to better capture unmet need in the postpartum period via four measures, including the *prospective*, *intermediate retrospective*, *current status,* and *retrospective (lactational amenorrhea method (LAM)/postpartum abstinent) current status* definitions, with varying approaches to account for women's reproductive intentions and postpartum circumstances. According to the *prospective* definition, women are classified as having an unmet need if they are amenorrheic or sexually abstinent since their last birth and want to avoid another pregnancy within two years [2]. The *intermediate retrospective* definition classifies women less than six months postpartum based on the intendedness of their last birth (i.e. those whose last pregnancy was unintended have an unmet need) and women six or more months postpartum based on whether they want another child (i.e. women who want to wait at least two years before their next child have an unmet need) [7].

Rossier and colleagues (2015) proposed the *current status* definition, which restricts unmet need to women who are at an immediate risk of unintended pregnancy: resumed menses and sex, not using contraception, and wish to delay childbearing for at least two years [8]. Unlike other definitions of unmet need, the *current status* definition classifies women who are amenorrheic or sexually abstinent as having no unmet need. These authors also proposed a fifth definition—*retrospective (LAM/postpartum abstinent) current status*—for women using LAM, who may not be at immediate risk of pregnancy but for whom the transition to risk is relevant for understanding contraceptive needs. Similar to the *classic* definition, estimates using these alternative approaches indicate that postpartum women have higher unmet need than all currently married women but, across indicators, they also yield very different estimates [8].

Theoretical focus

Estimates of postpartum family planning needs are generally made for all women less than two years postpartum; however, need for contraception varies significantly over the postpartum period, as sexual activity, amenorrhea, and breastfeeding practices change. Population-level estimates obscure these dynamic patterns and their associated risks. Additionally, while studies have indicated that fertility intentions may fluctuate depending on individual, relationship, and community influences [10–12], most are unable to account for these varying preferences within individuals. To date, few studies examining contraceptive needs in the postpartum period have assessed how shifting pregnancy preferences and concurrent changes to postpartum behaviors and experiences may impact unmet need for contraception, particularly within the first 12 months after childbirth [13]. We use nationally representative, longitudinal data collected among women interviewed at six-weeks, six-months, and one-year postpartum from Ethiopia to examine how estimates of unmet need and demand for postpartum contraception vary within individuals, both by definition of unmet need and demand indicator used, and over time, comparing six measures that uniquely account for women's postpartum circumstances.

Data

Data were collected among pregnant and postpartum women in Ethiopia between 2019-2021 as part of the Performance Monitoring for Action (PMA) Ethiopia project. A household census was conducted in 217 enumeration areas (EAs) across six regions in late 2019, screening all women

in identified households aged 15-49 for participation in the panel survey. Eligible women included those who were pregnant at enrollment or who delivered within the six weeks preceding the survey. Participants pregnant or <5 weeks postpartum at enrollment completed an enrollment interview and were interviewed again at six weeks, six months, and one-year postpartum; participants 5-6 weeks postpartum at enrollment completed the enrollment and six-week interviews concurrently and were interviewed again at six months and one-year postpartum. All participants provided oral consent for their participation in enrollment and follow-up activities in accordance with National Ethical Review Guidelines among a population with low literacy. One-year postpartum follow-up data are being collected and will be included in final analyses.

Analytic sample

Given challenges imposed by the COVID-19 pandemic, timing of the six-week and six-month postpartum interviews were delayed for some women, thereby increasing the time between birth and associated follow-up interviews. Definitions of unmet need vary as women progress into the later postpartum period, thus, we explored levels of unmet need among women who completed postpartum interviews at two time points: women who were 1) 0-6 months postpartum, and 2) 7-12 months postpartum, using their responses to the six-week and six-month follow-up interviews, respectively. Altogether, 2,853 pregnant (n=2,237) or postpartum women (n=616) were enrolled into the study. A total of 2,388 and 2,414 women completed the six-week and six-month postpartum interview, respectively. Analyses were restricted to women who were married/in-union at enrollment and not pregnant at six months postpartum, with completed interviews within the 0-6-month or 7-12-month periods. Analytic samples comprised 2,186 women 0-6 months postpartum and 1,383 women 7-12 months postpartum. Sample characteristics of women excluded were examined to assess and mitigate the potential for selection bias among women successfully re-interviewed postpartum.

Research methods

Measures

Our primary outcome was unmet need and demand for contraception at six weeks and six months postpartum, measured according to the definitions described for each of the six measures (Table 1). Retrospective and prospective pregnancy preferences were ascertained during enrollment and again at six months postpartum. At six weeks and six months postpartum, women were also asked if they were currently breastfeeding, and if so, exclusively; if they had resumed sexual intercourse; and if they were using contraception; intentions to use contraception were assessed at enrollment and six weeks postpartum. At six months postpartum, women were asked if their menses had returned and if they were currently pregnant.

As resumption and estimated timing of postpartum menses was only ascertained at the six-month postpartum interview, we used women's retrospective report to create two binary variables indicating whether women were amenorrheic (no return of menses) or non-amenorrheic (menses returned) by the date they completed their six-week and six-month follow-up interviews, when other circumstances and practices informing unmet need were captured. Preference to prevent childbearing in the next two years was dichotomized (yes/no) for estimates of women's unmet need among women 0-6 months postpartum using their responses at enrollment, while estimates for the 7-12-month period relied on women's responses from the six-month interview. Women's exclusive breastfeeding, sexual activity, and contraceptive status were each dichotomized (yes/no) for the 0-6 months postpartum and 7-12 months postpartum estimates using women's responses to the six-week and six-month interviews, respectively.

Current analysis: Design-based descriptive statistics summarized the distribution of participant characteristics. Prevalence and 95% confidence intervals (CIs) for each of the five measures of unmet need for postpartum contraception were estimated, using survey weights to account for the complex sampling design, probability of selection, clustering of women, and a woman's probability of completing the six-week and six-month postpartum interviews, respectively. All analyses were conducted using Stata 16.1. All study procedures were approved by both the Addis Ababa University, College of Health Sciences [075/13/SPH] and Johns Hopkins Bloomberg School of Public Health [00009391] Institutional Review Boards.

Forthcoming analysis: We will explore unmet need dynamics among the subsample of women for whom we have longitudinal data collected across the three interviews (six-week, six-month, and one-year postpartum). In this second stage of the analysis, we will examine how women's individual-level contraceptive needs and demands shift over time throughout the postpartum period, using each of the different indicators proposed, and assess how these estimates vary according to women's sociodemographic characteristics, including those informed by the literature: age, residence, educational attainment, ever use of contraception, and parity.

Preliminary and expected findings

Women 0-6-months postpartum completed the six-week interview at 10.3 weeks postpartum, on average (range: 2.6-24.0), while those in the 7-12-month postpartum sample were interviewed at 31.7 weeks postpartum, on average (range: 25.0-51.1). Altogether, 69.3% of women 0-6 months were exclusively breastfeeding their infant, which dropped to 6.8% among those 7-12 months. By 0-6 months postpartum, 4.4% of women reported their menses had returned, compared to more than one-third at the 7-12-month interview. About half of women 0-6 months had sex since delivery, which increased to 93.6% among women 7-12 months postpartum. Contraceptive use more than doubled as time passed since delivery with 20.6% of women 0-6 months postpartum reporting use, relative to 44.3% of women 7-12 months postpartum. One-third of women indicated their last pregnancy was unintended, and 40% of women 0-6 months postpartum wanted to wait at least two years before having another child versus 95% of women 7-12 months postpartum.

Results indicate significant variation in the identification of women 0-6 months postpartum with an unmet need for contraception—ranging from 23.85% (CI: 21.47-26.42) via the *classic/intermediate* definitions to nearly one-half of women (44.82% (CI: 41.56-48.13)) via the *prospective* definition (Table 2). Differences between indicators grew among women later in the postpartum period, ranging from 3.81% (CI:9.83-13.74) following the *retrospective current status* definition to one-fifth of women (21.84% (CI:18.73-25.30)) using the intermediate definition. Approximately 15-16% of women 7-12 months postpartum were classified as having an unmet need for contraception according to the *classic* and *prospective* definitions. More than half (52.36%) of women 0-6 months postpartum had an unmet demand for contraception, dropping to 38.27% among women 7-12 months postpartum, according to the *current status* definition.

Conclusion and next steps

Our results highlight the significant differences in the proportion of women with an unmet need and demand for contraception at varying times in the first year postpartum, especially among women in the later postpartum period (7-12 months). Unmet need is a widely used indicator for evaluating the progress and impact of contraceptive programs, yet our preliminary results show that estimates among postpartum women vary substantially based on the measure used and the timing postpartum women are surveyed. Such variability has important implications for family planning policies and programs. In the next steps of this analysis, we will explore how women's individual-level contraceptive needs and demands shift over time throughout the postpartum period to understand women's reproductive trajectories and associated health risks postpartum.

Table 1. Definitions of postpartum women classified as having an unmet need or unmet demand for contraception by measure and number of months since delivery

	0-6 months postpartum	7-12 months postpartum
Classic	Amenorrheic women whose last birth was unwanted or mistimed and who are not using contraception	
Prospective (Ross & Winfrey, 2001)	Amenorrheic who do not want a birth in the next two years and who are not using contraception	
Intermediate (Bradley & Casterline, 2014)	Amenorrheic women whose last birth was unwanted or mistimed and are not using contraception	Amenorrheic women who do not want a birth in the next two years and who are not using contraception
Current status (Rossier et al, 2015)	Non-amenorrheic women or women who have resumed sex since delivery, who do not want a birth in the next two years, and who are not using contraception	
Retrospective (LAM + PPA*) current status (Rossier et al, 2015)	Women who are amenorrheic (de facto LAM users) or have not resumed sex since delivery and whose last birth was unwanted or mistimed and who are not using contraception AND Non-amenorrheic women or women have resumed sex since delivery, who do not want a birth in the next two years, and who are not using contraception	
Unmet demand for contraception (Moreau et al., 2019)	Non-amenorrheic women who have resumed sex since delivery, who do not want a birth in the next two years, who are not using contraception, and who intend to use contraception in the future	

*LAM=lactational amenorrhea method. PPA=postpartum abstinent.

Table 2. Proportion and 95% Confidence Intervals (CIs) of women with an unmet need for postpartum contraception, by unmet need definition and number of months since delivery

Months postpartum	Classic	Prospective	Intermediate	Current Status	Retrospective LAM + PPA*	Unmet demand^
0-6 months (n=2,186)	23.85 (21.47–26.42)	44.82 (41.56–48.13)	23.85 (21.47–26.42)	27.36 (24.44–30.48)	38.71 (35.79–41.71)	52.36 (46.01-58.64)
7-12 months (n=1,383)	15.04 (12.81–17.57)	16.28 (13.59–19.38)	21.84 (18.73–25.30)	7.04 (5.67–8.72)	3.81 (2.77–5.23)	38.27 (27.77–49.99)

Notes: Weighted Ns and proportions presented. *LAM=lactational amenorrhea method. PPA=postpartum abstinent. ^Unmet demand for contraception estimated among women with an unmet need according to the *current status* definition: 0-6 months (n=604) and 7-12 months (n=98)

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