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ABSTRACT

Contraceptive Concordance*

This paper proposes an indicator of contraceptive concordance that identifies the alignment between stated preferences for contraception and concurrent contraceptive behavior. The proposed indicator departs from traditional approaches to measurement in family planning that infer concordance from the alignment between women's contraceptive (non-)use and their fertility preferences. The indicator is estimated using data from a cross-sectional survey that was conducted with 1,958 married women in rural India. More than half of all women in the sample (51.2 percent) report that they are currently using a contraceptive method. More than 3 in 5 women (60.8 percent) were classified as wanting to use a contraceptive method at the time of the survey. While 60 percent of sample women are classified to be concordant (either wanted users or wanted non-users), almost 1 in 4 women (24.8 percent) state a preference for using contraception but are not users (unwanted non-users), and 15.2 percent of women state a preference for not using contraception but are users (unwanted users). The paper discusses the comparative advantages and limitations of this approach relative to traditional measures and other recently developed indicators.

JEL Classification: J13, I15

Keywords: contraception, concordance, family planning, India, measurement

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Introduction

Progress: Slow or Stagnant?

The 1994 International Conference on Population and Development (ICPD) brought forth a shift towards a rights-based approach to family planning and reproductive health (FP/RH) policy, practice, and service delivery (UNFPA 2014; Hardee, Kumar, et al. 2014; Hardee, Harris, et al. 2014). Through this movement, there has been growing demand from researchers, policymakers, and practitioners to develop new FP/RH indicators that effectively embody ICPD's core mission to promote reproductive agency and well-being (Bingenheimer et al. 2023). However, current FP/RH indicators have largely fallen short (or failed altogether) to effectively reflect these goals.

Recently, there has been conceptual progress, with a consensus emerging around the need for new metrics that better reflect the principles of agency and choice in FP/RH decision-making (Holt et al. 2024; Bhan et al. 2022; Hardee and Jordan 2021). To this end, considerable efforts have been made to introduce indicators that capture informed choice in contraceptive decision-making as a means to both infer the demand for family planning and estimate the extent to which such demand has been met.[6] While efforts in this space have been enthusiastic, the development and implementation of new demand-side measures have been conspicuously slow. Recent proposals to operationalize these concepts into concrete indicators remain in the early stages of development and have been limited by: 1) a lack of standardized definitions, methodologies, and objectives for measurement; 2) limited feasibility and validation across contexts and populations, and: 3) uncertainty around the extent to which such indicators can be interpreted at various levels (e.g., person-centered, program-centered, population-centered) and by various audiences (academics, practitioners, or policymakers, among others). In the absence of clear alternatives to measuring the demand for contraception (specifically) and family planning (more broadly), there is a general concern that the field will continue to rely on outdated, problematic measures that were developed prior to and have been widely critiqued since ICPD.

The Elusive Quest for Contraceptive Concordance

A key challenge to effectively measuring the demand for contraception is determining the extent to which an individual's contraceptive behavior does, in fact, align with their true preferences for contraception (Holt et al. 2023; Boydell and Galavotti 2022). Most current indicators inherently assume that contraceptive (non-)use and (dis)continuation are directly reflective of contraceptive demand; concordance between contraceptive preferences and behavior therefore follows from what is observed. However, in the absence of direct and unbiased preference elicitation, such measures risk misinterpreting observed behavior as indicative of informed and autonomous choice (Senderowicz 2020; Rothschild, Brown, and Drake 2021). This risk highlights the need for indicators that can successfully distinguish between states of contraceptive concordance (both in terms of preferred use as well as preferred non-use), states where contraceptive use persists despite preferences for non-use (proxied by unwanted family planning), and states where preferences for contraceptive use are not being realized (proxied by unmet need).

[6] Capturing the level of met demand for family planning through contraceptive use has been identified as a key indicator of progress in many global FP/RH programs and development agendas, including the 2012 London Summit on Family Planning and, more recently, as target 3.7 of the 2030 Sustainable Development Goals (SDGs) (United Nations 2018). Access to family planning, specifically family planning demand satisfied with a modern method, is one of the 14 tracer indicators recommended by the World Health Organization for measuring progress toward Universal Health Coverage (World Health Organization 2023).

In this study, we propose an indicator of contraceptive concordance, building on recent conceptual and empirical work that has sought to identify the alignment between stated contraceptive preferences and concurrent behavior (Holt et al. 2023; Senderowicz 2020; Burke and Potter 2023; Cardona et al. 2024; Karra and Zhang 2021). We develop a simple approach to elicit this indicator in routine, cross-sectional survey data, and we use this approach to estimate the prevalence of contraceptive concordance in a sample of married women in rural India. We discuss the comparative advantages and limitations of our approach relative to other recently developed indicators.

Methods

Data

We use data from a cross-sectional survey that was conducted between March 2024 and May 2024 with a sample of 1,958 women in Jaunpur district in Uttar Pradesh. We first conducted a listing exercise to enumerate 19,387 households in 103 villages in two blocks of Jaunpur district (Appendix Figure 1). As part of the listing, we identified households that had at least one married female household member between the ages of 18 and 35 who had given birth to at least one child in her lifetime, who was neither pregnant nor sterilized, and who resided with her mother-in-law at the time of the listing.[7] Following the listing, we approached eligible households to conduct in-person surveys with eligible women in their homes. Only one eligible woman was surveyed per household; if multiple women from the same household were eligible, the youngest eligible woman from the household who consented to the study was chosen to participate.

Ethical Considerations

Ethical approval for the study was granted by Boston University (Protocol ID: 6567E) and the Monk Prayogshala Institutional Review Board (Protocol ID: 098-022) in India. Written or verbal consent was obtained from each respondent, and all respondents were surveyed in a private room or space in their homes by trained female enumerators. All interviews were conducted in either Hindi or Bhojpuri.

The Survey

Our survey instrument collected data on household demographics and women's socioeconomic backgrounds, birth histories, current and prior contraceptive use, marriage and sexual activity, fertility preferences, measures of autonomy and decision-making, social connections, utilization of health services, including family planning and reproductive health services, and broader measures of social and economic well-being. For this study, we leverage survey questions and data from a module that measured respondents' contraceptive preferences and behavior. The table below presents the survey questions that were asked of all women in our sample about their current contraceptive use as well as their preferences for contraception. Among these questions, question Q1, which measures current use of contraception, is already included as part of standard surveys like the Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), while three additional questions, Q2A, Q2B, and Q3, are being newly introduced in our survey beyond the standard contraception module.

[7] This cross-sectional survey forms the baseline for an upcoming randomized controlled trial that aims to leverage intrahousehold dynamics between women and their mothers-in-law to improve mental health and reproductive health outcomes.

Variable	Question
For All Women:	
Q1: Current use of contraception	Are you currently doing something or using any method to delay or avoid getting pregnant? 1. Yes 2. No

Additional questions that are proposed include:

For Current Users (Q1 = 1):	
Q2A: Wants to stop using method	If you had the choice and ability to stop using your family planning method, would you choose to stop? 1. Yes → SKIP Q2B 2. No 88. Don't Know
Q2B: Wants to switch using method IF YES: A follow-up question is asked to probe which specific method(s) the woman would like to switch to.	If you had the choice and ability to switch to another family planning method, would you choose to switch? 1. Yes 2. No 88. Don't Know

For Current Non-Users (Q1 ≠ 1):	
Q3: Wants to start using method IF YES: A follow-up question is asked to probe which specific method(s) the woman would like to start.	If you had the choice and ability to use a family planning method, would you use a method? 1. Yes 2. No 88. Don't Know

A Measure of Concordance

Our indicator of contraceptive concordance is motivated by Senderowicz (2020)'s conceptual work on contraceptive autonomy and builds on recent theoretical and empirical studies by Holt et al. (2023) and Rothschild et al. (2024) to estimate preference-aligned fertility management (PFM) (Holt et al. 2023; Senderowicz 2020; Rothschild et al. 2024) and a more recently proposed measure of misaligned contraceptive use by Bullington et al. (2025) (Bullington et al. 2025). Each of these approaches fundamentally relies on the identification of concordance between contraceptive preferences and behavior, either as wanted contraceptive use or wanted non-use. As shown in Figure 1, an individual's contraceptive (non-)use can be assessed against her preference for (not) using contraception, resulting in one of four possible outcomes: 1) wanted non-use of contraception (Box A); 2) wanted use of contraception (Box D); 3) unwanted non-use of contraception (Box C); or 4) unwanted use of contraception (Box B). Wanted use and wanted non-use together indicate contraceptive concordance, whereby individual preferences for contraceptive (non-)use are aligned with their contraceptive behavior, resulting in a successful family planning outcome from a rights-based perspective. In contrast, discordance is identified by a) contraceptive non-users who express a preference for using contraception, resulting in unwanted non-use of contraception, which is currently (and imperfectly)

proxied by unmet need for family planning (Bradley and Casterline 2014; Karra 2022), or b) contraceptive users who express a preference for non-use, resulting in unwanted use of contraception, which is currently (and again imperfectly) proxied by unwanted family planning use, the complement to unmet need (Canning and Karra 2023).

Figure 1: Contraceptive Autonomy Framework

		Using FP Method	
		No	**Yes**
Wants FP Method	**No**	**A**	**B**
	Yes	**C**	**D**

Source: Adapted from Senderowicz (2020).
Notes: If we treat the boxes as containing the proportion of women of reproductive age in each category, we can consider contraceptive prevalence, as currently measured, as $B + D$. Contraceptive concordance, measured by wanted use and wanted non-use, is represented by boxes D and A, respectively. Discordance is represented either as unwanted non-use, box C, or as unwanted use, box B.

Our indicator of contraceptive concordance seeks to estimate each of the four boxes in the Senderowicz (2020) framework with our proposed survey questions. We first classify a woman to either be a current contraceptive user or current contraceptive non-user based on her stated response to Q1. We then classify a woman to have a stated preference for using contraception if:

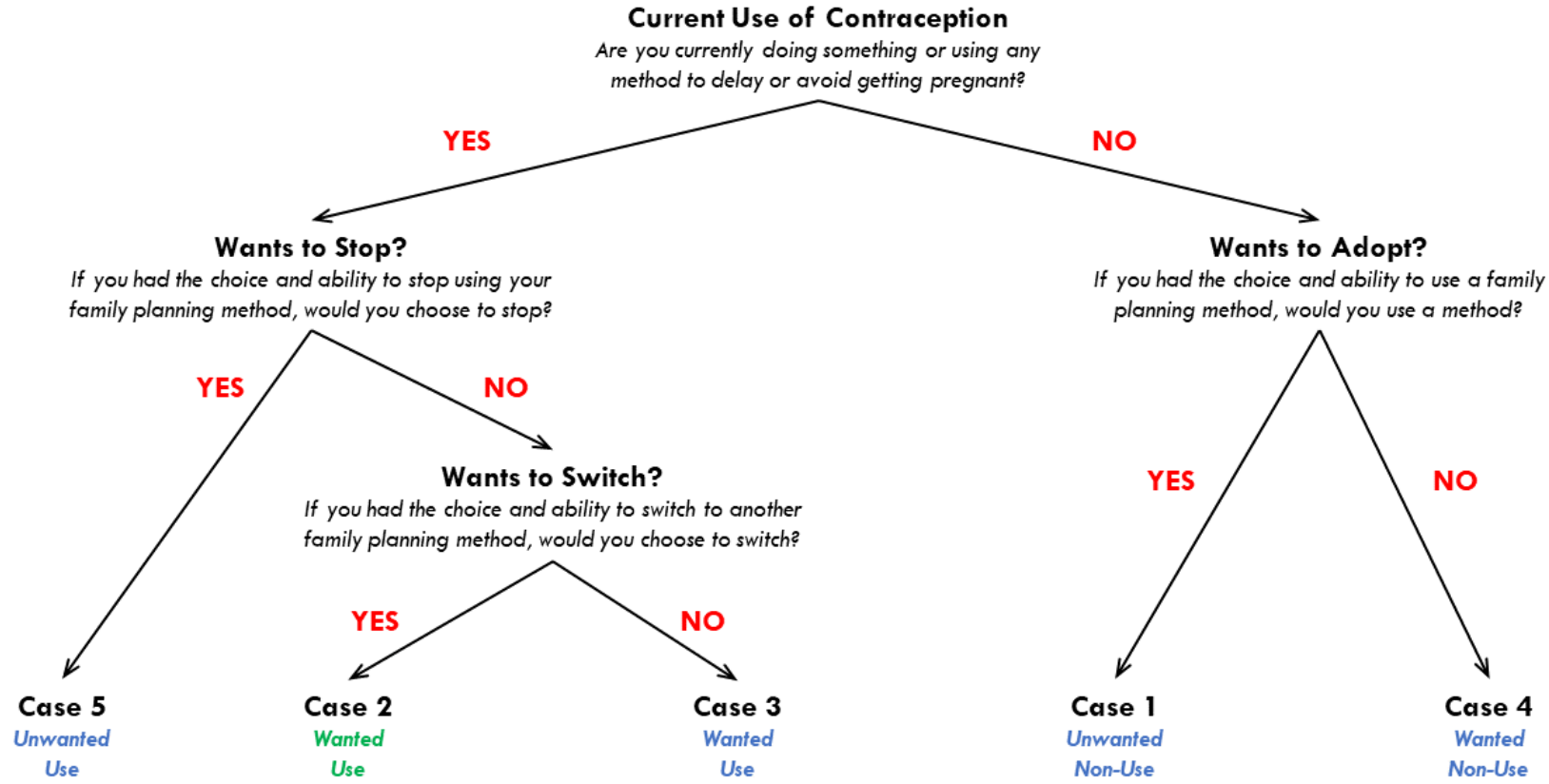
Case 1: She is a current non-user and stated a preference for wanting to adopt a contraceptive method (Q1 = 2 and Q3 = 1);
Case 2: She is a current user and stated a preference for not wanting to stop her contraceptive use, but stated a preference for switching contraceptive methods (Q1 = 1 and Q2A = 2 and Q2B = 1); or
Case 3: She is a current user and stated that she neither wants to stop her current contraceptive use nor wants to change her current contraceptive method use (Q1 = 1 and Q2A = 2 and Q2B = 2).

By the same token, we classify a woman to have a stated preference for not wanting to use contraception if:

Case 4: She is a current non-user and stated a preference for not wanting to adopt a contraceptive method (Q1 = 2 and Q3 = 2); or
Case 5: She is a current user and stated a preference for discontinuing her method use (Q1 = 1 and Q2A = 1).

Figure 2 presents a flow diagram identifying the cases based on the responses to the survey items.

Figure 2: Contraceptive Concordance Case Flow Diagram



For the time being, we take a conservative approach and classify women with uncertain contraceptive preferences as not wanting to adopt that behavior and, in turn, wanting to continue with their current behavior. Specifically, women who state that they do not know whether they want to adopt contraception are classified as not wanting to adopt contraception. By the same token, women who state that they do not know whether they want to switch to another contraceptive method are classified as not wanting to switch methods, while women who stated that they do not know whether they want to stop contraception are classified as not wanting to stop contraception. We take the above classifications and infer that a woman's contraceptive preferences are concordant with her behavior if a) she neither wants to stop or switch her contraceptive method, among women who are current users (**Case 3**); or b) she does not want to start a method, among women who are current non-users (**Case 4**). By the same token, we infer that a woman's contraceptive preferences are discordant with her behavior if a) if she wants to start, among women who are current non-users (**Case 1**); or b) if she wants to stop contraceptive use, among women who are current users (**Case 5**).

We identify women who are classified as **Case 3** to be wanted users (Box D in Figure 1), while women who are classified as **Case 4** are identified as wanted non-users (Box A). We further identify the two types of discordance by stating that: a) a woman is classified to be an unwanted non-user of contraception (Box C) if she wants to start a method and is a current non-user (**Case 1**); and b) a woman is classified to be an unwanted user of contraception (Box B) if she wants to stop her method use and is a current user (**Case 5**).

In our approach, we face a challenge as to how we should classify the subset of women who are current users and want to use contraception, but who also state a preference for switching their current method (**Case 2**). Based on the 2-by-2 framework, these women would likely be classified as wanted users (Box D) since they prefer to use contraception and are using contraception; however, an argument could be made that they are unwanted non-users of contraception since they are not using their preferred contraceptive method and should therefore be classified into Box B. Since the framework only considers the contraceptive use and preferences on the extensive margin (whether or not a woman is using / wants to use contraception) and not on the intensive margin (the specific contraceptive method that the woman is using / prefers), we classify women who are current users but who want to switch their choice of method to be wanted users (Box D).

Figure 3 presents the contraceptive concordance table with our proposed case classifications as described above.

Figure 3: Contraceptive Concordance Table with Case Classifications

		Using FP Method	
		No	**Yes**
Wants FP Method	**No**	**Wanted Non-Use** Case 4	**Unwanted Use** Case 5
	Yes	**Unwanted Non-Use** Case 1	**Wanted Use** Case 2, Case 3

Note: Each of the boxes describes whether a woman's (non-use) is (un)wanted or not. Specifically: 1) "wanted non-use" refers to a woman who is a current non-user and wants to be a current non-user; 2) "unwanted use" refers to a woman who is a current user but does not want to be a current user (i.e. she wants to be a current non-user); 2) "unwanted non-use" refers to a woman who is a current non-user but does not want to be a current non-user (i.e. she wants to be a current user); and 2) "wanted use" refers to a woman who is a current user and wants to be a current user.

Results

Table 1, Panel A presents a range of descriptive statistics for our sample of 1,958 women. On average, women in our sample are 26.3 years old, have 11.5 years of education, and have 1.7 children. The majority of women in our sample are Hindu (94.2 percent), 89 percent of women either belong to a Scheduled Caste or a Scheduled Tribe (32.8 percent), or an Other Backward Class (56.1 percent), and 46.6 percent of women come from poor households.[8] Finally, 18.8 percent of women report having worked in the last year. In a separate analysis, we compare our study sample with data from the 2019-2021 National Family Health Survey of India and find that women in our sample are similar across a range of characteristics to a nationally representative sample (Anukriti et al. 2025).

More than half of all women in our sample (1,003 women, or 51.2 percent) report that they are currently using a contraceptive method, with almost twice as many users reporting that they are using traditional methods relative to users who report using a modern method (Table 1, Panel B). More than 3 in 5 women (1,190 women, or 60.8 percent) were classified as wanting to use a contraceptive method at the time of the survey (**Cases 1 to 3**, combined), while 785 women were classified as not wanting to use a contraceptive method at the time of the survey (**Cases 4 to 5**, combined) (Table 1, Panel C). Uncertainty over switching, starting, or stopping methods was very low, with fewer than one percent of women reporting that they did not know whether they would start, switch, or stop if given the opportunity.

[8] A household is defined as poor if it either has a poverty line card (i.e., BPL Card, AAY Card, Red Ration Card, and White Ration Card) or belongs to the bottom tercile of the asset index distribution. The asset index is constructed using principal component analysis and the following household variables: indicators for major sources of drinking water (piped, tap water, well), access to toilet facilities (flush, pit, twin-pit), the materials used for the floor and roof of the house, types of cooking fuel used (LPG, dung, and others), whether the household has a separate kitchen, ownership of livestock (cow, goat, chicken), the number of rooms used for sleeping in the household, and land ownership (in acres).

Among the subsample of 955 current non-users, more than half (485 women, or 50.8 percent of non-users) reported wanting to start a new method and would therefore be classified as having unwanted non-use (**Case 1, Box *C***), implying that 470 non-users (49.2 percent of non-users) would be classified as wanted non-users (**Case 4, Box *A***). By the same token, the sample of 1,003 current users can be disaggregated into the subsample of 298 users (29.7 percent of users) who prefer to discontinue their method use and would therefore be classified as having unwanted use (**Case 5, Box *B***), or continue using contraception (705 women, or 60.3 percent of users). However, we note that among these 705 users who prefer to contracept, 114 of these users (16.2 percent) prefer to switch methods (**Case 2**), while the remaining 591 (83.8 percent) users who prefer to contracept and not switch methods would be classified as wanted users (**Case 3, Box *D***). Figure 4 presents the prevalence estimates for concordance (wanted use and non-use), unwanted non-use, and unwanted use of contraception together in a 2-by-2 cross-tabulation.

As noted, we currently classify women who prefer to switch methods to be wanted users (**Case 2, Box *D***) recognizing that a proportion of these women may be dissatisfied with their method to the extent that some women may eventually prefer to not use contraception altogether. To provide additional insight on the types of methods that women prefer to switch from, we present the method mix distribution among the subgroup of 114 women who have a stated preference for switching (Table 2). Although our subsample is small, we note that almost half of these women in this subsample (64 percent) state that they would prefer to switch out of using traditional methods (Rhythm method or withdrawal), while more than one in three women in this subsample (37.7 percent) state a preference for switching out of a male-dependent method (male condoms or withdrawal).

Taken together, we find that 60 percent of women in our sample are classified to be concordant (either wanted users or wanted non-users) if we include women who prefer to switch to be wanted users; this estimate of concordance drops to 54.2 percent if women who prefer to switch are recategorized as being discordant.[9]

Table 2 presents the contraceptive methods that are used among women who want to switch methods, who are concordant in their method use, and who have unwanted method use, respectively. Due to small sample sizes in women's use of some methods, we classify methods into broader categories of modern and traditional method type following Festin et al. (2016) (Festin et al. 2016). We observe that the majority of concordant users (excluding women who prefer to switch methods) use traditional methods (67.2 percent) relative to modern methods (32.8 percent), which reflects the current method mix among non-sterilized contraceptive method users in the Indian context (Government of India 2022). In addition, we observe that the distribution of method use between traditional methods and modern methods are roughly equal among the subsample of women who report unwanted use.

While stating a preference to stop their current method, we see in Table 3 that 69.9 percent of women who are classified as unwanted users state that they do not want another child, while 30.1 percent of women who are unwanted users state a preference for wanting another child in the future. In contrast, 52.9 percent of women who are concordant in their contraceptive (non-)use state a preference for wanting another child in the future, while 47 percent of these women state that they do not want any more children.

[9] In the absence of additional information, it is not clear what type of discordance (Box B or Box C) would be most appropriate to assign women who prefer to switch their method use.

In Figure 5, we compare our approach to calculating contraceptive concordance with standard approaches that calculate (non)alignment between contraceptive use and fertility preferences, such as unmet need, demand satisfied, and unwanted family planning. Figure 5a) presents the 2 x 2 matrix of contraceptive concordance, while Figure 5b) presents the 2 x 2 matrix of alignment between contraceptive use and fertility preferences. We note that even though the total share of discordant women (the sum of both red boxes) are comparable across both approaches (40 percent with our approach versus 39.1 percent with the standard approach), the relative proportions of unwanted users and unwanted non-users are significantly different between approaches; in our approach, 15.2 percent of women are classified to be unwanted users, while only 3.4 percent of women are classified to have unwanted family planning under the standard approach. By the same token, the relative proportion of concordant users is significantly higher under the standard approach (47.8 percent) relative to our approach (36.0 percent), while the proportion of concordant non-users is significantly higher under our approach (24.0 percent) relative to the standard approach (13.1 percent).

Figure 6 further examines the extent to which women's reported preferences for contraceptive (non-) use align with their reported preferences for wanting to space or limit childbearing. A tabulation of the share of women who currently want to use contraception against the share of women who do not want a child in the next two years shows significant discordance between these stated preferences. Specifically, 30.4 percent of women in our sample report that they do not want to use contraception while also reporting that they do not want to have a child in the next two years. Moreover, 7.7 percent of women indicate wanting to have a child within the next two years while also wanting to currently use contraception.

Finally, we present Cohen's Kappa statistics to infer the degree of alignment between our new measure of contraceptive concordance and the standard approach to calculating concordance between fertility preferences and contraceptive use (Figure 7). When examining the extent to which the measures align, the Kappa statistic of 0.67 for current users who state a preference for contraceptive use and a preference for not wanting to have another child in the next two years shows a substantial agreement between the two measures for concordant use, and hence a potential alignment between contraceptive and fertility preferences. To a lesser extent, the Kappa statistic of 0.48 for current non-users who state a preference for contraceptive use and a preference for wanting a child within the next two years indicates a moderate agreement between the two measures for discordant non-use. However, our findings suggest significant misalignment in inference gained between the two measures in cases of preferred contraceptive non-use. Specifically, while a Kappa statistic of 0.28 for current non-users who do not want to use contraception and want to have a child within the next two years suggests modest agreement between the two measures for concordant non-use, the Kappa statistic of 0.08 for current users who do not want to use contraception and who want to have a child within the next two years show none to slight agreement. Given the extent to which these two approaches do not correlate, we conclude that standard approaches to measuring concordance between *fertility* preferences and contraceptive use would not be an effective proxy to infer concordance between *contraceptive* preferences and use.

Discussion

We propose an indicator of contraceptive concordance that captures the (mis)alignment between contraceptive preferences and concurrent contraceptive behavior. We test our indicator with survey data from married Indian women and estimate that 3 out of 5 women (60 percent) in our sample are concordant with their contraceptive use and behavior, while almost 1 in 4 women (24.8 percent) are

unwanted non-users of contraception, and 15.2 percent of women in our sample are estimated to be unwanted users of contraception.

Comparative Advantages

Our measure of contraceptive concordance offers several advantages over traditional family planning indicators like unmet need. It is easy to implement, requiring up to three additional questions to be asked of respondents in standard, nationally representative health surveys like the DHS or MICS, which already collect data on respondents' current contraceptive use.[10] For current users, up to three additional questions would be required (depending on whether users state a preference for switching methods), while only two are needed for non-users (depending on whether non-users state a preference for adopting a method). The simplicity with which concordance can be calculated from these few questions would make this approach particularly attractive for family planning and reproductive health programming, given the field's ongoing struggles to develop indicators that are both conceptually aligned with the aim to measure informed choice while also being feasible to implement as part of large-scale, population-representative surveys. Conceptually, this measure is superior to current approaches that create a false correspondence between fertility preferences and contraceptive use (Karra 2022; Holt et al. 2023; Senderowicz 2020). In particular, indicators like unmet need inaccurately assume that all women who wish to space or limit pregnancies inherently prefer using contraception, yet many may have no demand for it due to a range of factors like religious beliefs, health concerns, or personal opposition. Conversely, some women who do not intend to space or limit pregnancies may still use contraception for other reasons, such as STI or HIV prevention. Taken together, these and other counterexamples make a strong case for developing indicators that dissever contraceptive preferences and demand from fertility preferences altogether.

Comparisons with PFM and Misaligned Contraceptive Use

Our new indicator of contraceptive concordance shares several similarities with PFM and a recently proposed indicator of misaligned contraceptive use (Holt et al. 2023; Rothschild et al. 2024; Bullington et al. 2025). A summary of PFM and its calculation is presented in Appendix Table 1, and a summary of misaligned contraceptive use is presented in Appendix Table 2. All three indicators prioritize an understanding of individuals' contraceptive preferences and seek to align them with their contraceptive behaviors, rather than assuming a direct link between reproductive desires and contraceptive use. By centering on preferences, each indicator seeks to offer a more accurate and person-centered understanding of contraceptive demand. Finally, each indicator has the potential to measure concordance between preferences for and use of particular methods of contraception and not just whether women seek to contracept or not.

Contraceptive concordance and PFM differ in a few key ways, namely in terms of how the indicators are operationalized and their resulting implications. In PFM, respondents are first asked questions about their contraceptive preferences before being asked about their contraceptive behavior. In the presence of anchoring biases, this approach may prime respondents to confirm their current behavior even if it may be unwanted, thereby overestimating concordance. Given that stated preferences are inherently anchored to and shaped by current behavior, it may be difficult for respondents to initially report a preference that would indicate a deviation from their current behavior (Ami, Aprahamian, and Luchini 2017). On the other hand, guiding respondents to reflect on whether their current

[10] When this study was initially conducted, USAID and the Demographic and Health Survey program were still operational. However, the program was put on pause in January 2025 and was terminated in February 2025 (Khaki et al. 2025; Abdel Ghany et al. 2025).

behavior is, in fact, preferred may overcome this issue. Both contraceptive concordance and misaligned contraceptive use take this latter approach by asking about contraceptive behavior first, followed by questions about whether women prefer their current behavior or would like to deviate, which may facilitate direct reflection. A direct test of each approach against the other is warranted, and further investigation is needed to test the extent to which concordance may be sensitive to ordering effects (Day et al. 2012).

Another difference between PFM, misaligned contraceptive use, and contraceptive concordance is in how stated preference and behavior questions are framed and elicited. PFM uses direct questions to identify a respondent's stated preferences by asking: "Do you currently want to be using any method to avoid pregnancy – that is, do something to keep it from happening?" Similarly, misaligned contraceptive use asks current users "Are you glad you are using contraception?" while asking current non-users "Do you wish you were using contraception?", embedding an evaluative framing of satisfaction with women's use or non-use within a set of direct questions. In contrast, contraceptive concordance uses hypothetically framed questions which, given the question order, are conditioned on the respondent's stated contraceptive behavior; for example, in the case when a respondent is a non-user, the stated preference question to assess whether the respondent would adopt a method is framed as follows: "If you had the choice and ability to use a family planning method, would you use a method?" This framing identifies preferences by first anchoring respondents to their current behavior and then leveraging respondents' stated willingness to change their behavior from their current state (their preference to deviate). The relative merits of direct versus hypothetical question framing have been discussed in other settings and, in a similar vein to ordering effects, is another difference between the approaches that warrants further evaluation (Ahlert, Breyer, and Schwettmann 2016).

Limitations

Our proposal for a new contraceptive concordance indicator is not without its limitations. Like PFM and misaligned contraceptive use, our indicator adopts standard language from the DHS to elicit contraceptive use, which frames the question around whether a respondent is taking an action or using a method to *avoid pregnancy*. Specifically, the question states "Are you currently doing something or using any method to delay or avoid getting pregnant?" This framing of contraception as a means of pregnancy prevention can be problematic given that contraception can be used for reasons other than fertility regulation. It may therefore be worth exploring whether contraceptive use should be framed independently of family planning and pregnancy prevention[11] to define a more expansive set of fertility regulation options than just contraception alone (Robinson 1997). Inconsistent wording across questionnaires also complicates the issue, as survey questions vary between using terms like "family planning method" and "contraceptive method" interchangeably. By the same token, inconsistent wording around preferences (having a "want," "desire," "intention," or "wish" for contraception, or being "glad" to use contraception) also presents a challenge for subsequent inference, particularly if distinctions in their meaning are differentially salient to respondents.[12] These nuances may or may not affect responses but should be tested to rule out any possibility for bias.

[11] Doing so, however, could be challenging to translate across different languages and cultural contexts, where the term "contraception" is often synonymously translated as "pregnancy prevention" (e.g., مانع حمل in Urdu or गर्भनिरोधक in Hindi) or even as "family planning" (परिवार नियोजन).

[12] In the case of misaligned contraceptive use, it may be difficult for a respondent to effectively answer the question "Are you glad you are using contraception?" to signal a latent demand if they distinguish a preference for contraception from satisfaction from contraceptive use. In the presence of negative framing, for example, a respondent may view

Direct preference elicitation, irrespective of how the questions are framed, also carries known biases, which have been highlighted in critiques of unmet need measures (Karra 2022; Senderowicz et al. 2023). Additionally, the dynamic nature of preferences creates uncertainty around the meaning of concordance at the time of the interview, especially if preferences and behaviors are likely to shift over short periods of time (Burke and Potter 2023; Cardona et al. 2024; Karra and Zhang 2021; Huber-Krum et al. 2021). Beyond its intrinsic value as a person-centered measure, it is not clear how useful contraceptive concordance could be to inform programs if contraceptive preferences, and concordance by extension, are changing frequently. In order for a service provider to effectively use the indicator to target respondents who are not concordant, there would either need to be sufficient stability in respondents' stated preferences and behavior that would allow for the indicator to accurately be reflective of their contraceptive demand, or preferences would need to be re-elicited more frequently up to the time of service delivery. To address these challenges, it is crucial to improve how contraceptive preferences are measured and understand the extent to which such measures can be programmatically relevant.

Conclusions

The contraceptive concordance indicator that we propose provides a conceptual and practical approach to understanding the alignment between women's contraceptive preferences and their actual behavior. By decoupling the demand for contraception from fertility preferences and the demand for childbearing, the concordance indicator offers a clearer and more person-centered understanding of women's contraceptive decisions. The simplicity with which the indicator can be operationalized makes it an attractive tool to be implemented as part of large-scale surveys and included as part of routine programmatic measurement. It requires minimal additional data collection, yet it provides significantly richer insights into women's contraceptive experiences. While contraceptive concordance holds promise for improving family planning metrics, further testing is needed to determine how it can be adapted for wider contexts and across diverse populations. A more rigorous comparative analysis of contraceptive concordance and other proposed indicators, such as PFM and misaligned contraceptive use, is also warranted. Finally, refinements that account for method-specific concordance should also be explored. By redefining how we measure contraceptive preferences and behavior, this indicator has the potential to improve reproductive health programs by demanding alignment between practice and core principles of voluntary contraceptive choice.

contraception as the best alternative within a generally poor choice set, where they may not necessarily be glad or satisfied with any of their potential alternatives. For this respondent, they may view their contraceptive use as a necessary and potentially costly means to avert a set of less preferred alternatives (e.g. a risk of pregnancy) rather than a means by which they seek gains to well-being for which they can be glad or satisfied. As a result, it is possible for this respondent to answer "no" to whether they are glad to be using contraception but still demand contraception as the best alternative for them, which may result in misclassification.

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Figures and Tables

Table 1: Descriptive Statistics

Variable	*N*	Mean	N_1
Panel A: General Descriptive Statistics			
Current use (1 = yes)	1,958	0.512	1,003
Current use of modern method (1 = yes)	1,958	0.175	343
Age	1,958	26.325	
Education (years)	1,887	11.526	
Number of children alive	1,957	1.778	
Wants another child within 2 years (1 = yes)	1,958	0.165	323
Caste of household			
Scheduled Castes/Scheduled Tribes (1 = yes)	1,951	0.329	641
Other Backwards Classes (OBC) (1 = yes)	1,951	0.561	1,094
Upper caste (1 = yes)	1,951	0.111	216
Household's religion, (1 = Hindu)	1,958	0.943	1,856
Household is poor (1 = yes)	1,945	0.466	907
Worked in the last year (1 = yes)	1,948	0.188	367
Panel B: Contraceptive Use			
Current use (1 = yes)	1,958	0.512	1,003
Current use of modern method (1 = yes)	1,958	0.175	343
Current use of traditional method (1 = yes)	1,958	0.337	660
Panel C: Contraceptive Preferences			
Currently wants to use (1 = yes)	1,958	0.608	1,190
Wants to start, among non-users (1 = yes)	955	0.508	485
Wants to stop, among users (1 = yes)	1,003	0.297	298
Wants to switch methods, among users who do not want to stop (1 = yes)	705	0.162	114
Uncertain about starting, among non-users (1 = yes)	955	0.009	9
Uncertain about stopping, among users (1 = yes)	1,003	0.003	3
Uncertain about switching methods, among users who do not want to stop (1 = yes)	705	0.004	3
Panel D: Contraceptive Concordance			
Concordance between wants and use, excluding switchers as concordant users (1 = yes)	1,958	0.542	1,061
Concordance between wants and use, including switchers as concordant users (1 = yes)	1,958	0.600	1,175
Unwanted non-use (1 = yes)	1,958	0.248	485
Unwanted use (1 = yes)	1,958	0.152	298
N	**1,958**		

Notes: Proportions are for a sample of 1,958 women aged 18-35, unweighted. Household poverty is an indicator variable that equals 1 if the household has a poverty line card (i.e., BPL Card, AAY Card, Red Ration Card, and White Ration Card) or belongs to the bottom terciles of the asset index distribution, and 0 otherwise. The asset index is constructed using principal component analysis and the following household variables: indicators for major sources of drinking water (piped, tap water, well), access to toilet facilities (flush, pit, twin-pit), the materials used for the floor and roof of the house, types of cooking fuel used (LPG, dung, and others), whether the household has a separate kitchen, ownership of livestock (cow, goat, chicken), the number of rooms used for sleeping in the household, and land ownership (in acres).

Table 2: Method Mix, Among Women who Want to Switch Methods, Wanted Users and Unwanted Users

Method	Switchers		Wanted Users (Excluding Switchers)		Unwanted Users	
	N	***Pct.***	***N***	***Pct.***	***N***	***Pct.***
Modern	41	36.0	194	32.8	146	49.0
Traditional	73	64.0	397	67.2	152	51.0
Observations	**114**		**591**		**298**	

Notes: Modern methods include: IUD, PPIUD, Multiload, injectables, pills, condoms (male and female), emergency contraception, Standard Days Method, Lactational Amenorrhea Method, and other modern methods. Traditional methods include the Rhythm Method, periodic abstinence, withdrawal, and other traditional methods.

Table 3: Fertility Preferences by Concordance

Fertility Preference	Wanted Users (incl. Switchers)		Wanted Non-Users		Unwanted Users		Unwanted Non-Users	
	N	***Pct.***	***N***	***Pct.***	***N***	***Pct.***	***N***	***Pct.***
Have another child	336	47.7	285	60.9	89	30.1	235	48.6
No more	366	51.9	174	37.2	207	69.9	245	50.6
Says they cannot get pregnant	0	0.0	1	0.2	0	0.0	2	0.4
Up to MIL	1	0.1	1	0.2	0	0.0	0	0.0
Up to husband	1	0.1	2	0.4	0	0.0	1	0.2
Up to God / fatalistic	0	0.0	4	0.9	0	0.0	0	0.0
Don't know	1	0.1	1	0.2	0	0.0	1	0.2
Observations	**705**		**468**		**296**		**484**	

Notes: Fertility preference information is missing for five women (two reporting wanted non-use, two reporting unwanted use, and one reporting unwanted non-use).

Figure 4: Contraceptive Concordance 2 x 2 Table

		Using FP Method		
		No	**Yes**	**Total**
Wants FP Method	**No**	470 (24.0)	298 (15.2)	768 (39.2)
	Yes	485 (24.8)	705 (36.0)	1,190 (60.8)
	Total	955 (48.8)	1,003 (51.2)	**1,958**

Notes: Cells are highlighted in green for concordant women and in red for discordant women. Percentages over the total number of women are presented in parentheses.

Figure 5: Contraceptive Concordance vs. Standard Measurement 2 x 2 Tables

		Using FP Method		
		No	**Yes**	**Total**
Wants FP Method	**No**	470 (24.0)	298 (15.2)	768 (39.2)
	Yes	485 (24.8)	705 (36.0)	1,190 (60.8)
	Total	955 (48.8)	1,003 (51.2)	**1,958**

(a) New measure

		Using FP Method		
		No	**Yes**	**Total**
Wants Another Child Within 2 Years	**Yes**	257 (13.1)	66 (3.4)	323 (16.5)
	No	698 (35.7)	937 (47.8)	1,635 (83.5)
	Total	955 (48.8)	1,003 (51.2)	**1,958**

(b) Standard measure

Notes: Cells are highlighted in green for concordant women and in red for discordant women. Percentages over the total number of women are presented in parentheses.

Figure 6: Concordance Between Contraceptive and Fertility Preferences

		Wants FP Method		
		No	**Yes**	**Total**
Wants Another Child Within 2 Years	**Yes**	171 (8.73)	152 (7.76)	323 (16.5)
	No	597 (30.49)	1,038 (53.01)	1,635 (83.5)
	Total	768 (39.23)	1,190 (60.77)	**1,958**

Notes: Cells are highlighted in green for "concordant" women and in red for "discordant" women. Percentages over the total number of women are presented in parentheses.

Figure 7: Cohen's Kappa Statistics of the Alignment between Contraceptive Concordance vs. Standard Measurement

		Using FP Method	
		No	**Yes**
Wants FP Method / Does not Want Another Child Within 2 Years	**No**	0.28*** (0.02)	0.08*** (0.01)
	Yes	0.48*** (0.02)	0.67*** (0.02)

Notes: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Cells are highlighted in green for concordance in stated preference and contraceptive (non-)use and in red for discordance in stated preference and contraceptive (non-)use. The displayed values are Cohen's Kappa statistics with standard errors in parentheses. Wants FP method is a binary indicator that takes a value of 1 if a woman answered she currently wants to use contraception. Does not want another child within two years is a binary indicator that takes a value of 1 if a woman reports she does not want a child in the next two years.