Check for updates

Unwanted Family Planning: Prevalence Estimates for 56 Countries

David Canning and Mahesh Karra

While there is a large literature on the prevalence of unmet need for family planning, there is no matching quantitative evidence on the prevalence of unwanted family planning; all contraceptive use is assumed to represent a "met need." This lack of evidence raises concerns that some observed contraceptive use may be undesired and coercive. We provide estimates of unwanted family planning using Demographic and Health Survey data collected from 1,546,987 women in 56 low- and middle-income countries between 2011 and 2019. We estimate the prevalence of unwanted family planning, defined as the proportion of women who report wanting a child in the next nine months but who are using contraception. We find that 12.2 percent of women have an unmet need for family planning, while 2.1 percent have unwanted family planning, with estimated prevalence rates ranging from 0.4 percent in Gambia to 7.1 percent in Jordan. About half of unwanted family planning use can be attributed to condoms, withdrawal, and abstinence. Estimating the prevalence of unwanted family planning is difficult given current data collection efforts, which are not designed for this purpose. We recommend that future surveys probe the reasons for the use of family planning.

INTRODUCTION

The 1994 International Conference on Population and Development in Cairo marked a significant shift in the role of family planning and reproductive health within the global development agenda. The conference resulted in a pivot away from the prioritization of family planning for population control and toward an approach based on sexual and reproductive health and rights and women's empowerment (Blanc and Tsui 2005; Cates and Maggwa 2014). To this end, a fundamental outcome of the conference, as stated in its Programme of Action, was a call for the global community to: (1) end target-driven and coercive family planning programs

David Canning, Department of Global Health and Population, Harvard T.H. Chan School of Public Health, Boston, MA, 02115, USA. Mahesh Karra, Frederick S. Pardee School of Global Studies, Boston University, Boston, MA, 02215, USA. E-mail: mvkarra@bu.edu.

© 2023 The Authors. *Studies in Family Planning* published by Wiley Periodicals LLC on behalf of Population Council.

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

motivated by population control and; (2) recognize voluntary family planning and informed choice as fundamental human rights (UNFPA 2014). More recently, the Guttmacher–Lancet Commission report on sexual and reproductive health and rights for all emphasized that while family planning programs can make an important contribution to the 2030 Agenda for Sustainable Development, they need to be carried out within a rights-based approach in which individuals are able to make decisions about their own sexual and reproductive lives, free from coercion (Starrs et al. 2018). The rights-based approach to sexual and reproductive health has many dimensions, but at its core, it is centered on individuals having a right to choose for themselves.

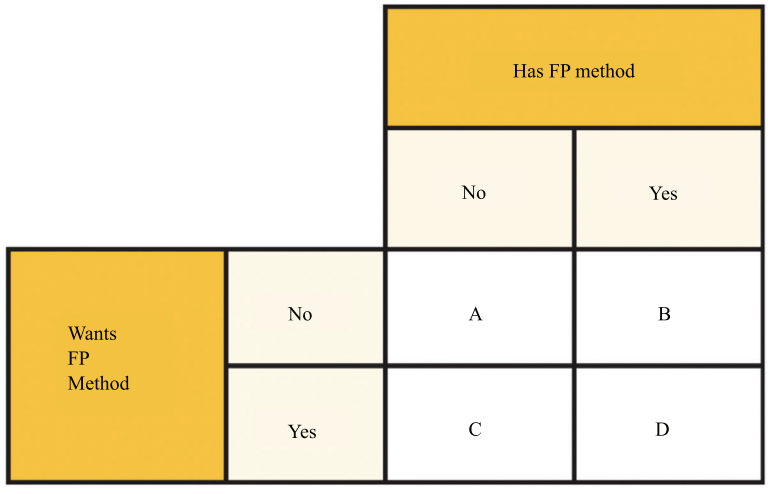
The right to choose a family planning method can be denied to women due to lack of access to services and, in more extreme cases, by reproductive coercion, for example, through the sabotage or tampering of contraceptive methods by their partners or others (Uysal et al. 2020; Silverman et al. 2020). While the most widespread issue is women being denied the contraceptive method that they want, there are also examples of women being forced to use contraception when they do not wish to do so. Studies of the history of family planning both prior to and following the Cairo conference have highlighted a number of examples of family planning programs that have been extremely coercive, which has raised significant concerns (Connelly 2008), though the consensus in the field has been that these cases were outliers and that programs are now voluntary (Bongaarts and Sinding 2009). While programs today usually respect sexual and reproductive rights in theory, there is a concern that targets and incentives for providers, combined with a paternalistic view that providers know what is best for women, may lead to a lack of autonomy and decision-making for women (Hardee, Harris, et al. 2014). Recently, there have been a number of small-sample qualitative studies that suggest that some contraceptive use is the result of coercion (Silverman et al. 2020; Senderowicz 2019; Biggs et al. 2020; Britton et al. 2021; Howett et al. 2021). Coercion in these studies has been identified through examples of biased counseling, misinformation by providers in informing clients on the benefits and side effects of methods, the refusal by providers to remove reversible long-acting methods, such as intrauterine devices (IUDs), and, in some cases, the provision of clinical and long-acting methods without the woman's consent.

One approach to dealing with issues of coercion in family planning programs has been to have a system of reporting individual cases, followed by investigation and resolution (Hardee, Harris, et al. 2014). However, the power imbalance between providers and women, combined with the providers' information advantage over women on method use, may make it difficult for women to even report coercion. In addition, the independence of such a review system may be questionable in the worst cases if a program respects reproductive rights in theory but is designed to be coercive in practice. A more reliable method would, therefore, be to collect information on contraceptive coercion in nationally representative samples. At present, no such effort has been undertaken.

Current measures from representative surveys, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys, do measure the met need (DHS 2021; Westoff 2006), and the unmet need (Machiyama et al. 2017; Bradley and Casterline 2014; Cleland, Harbison, and Shah 2014), for family planning. Both indicators have received considerable criticism both in terms of their conceptual foundations and operation in practice, and neither is designed to reflect a rights-based approach to family planning (Jain, Bruce, and Mensch

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

FIGURE 1 Contraceptive autonomy framework



NOTES: If we treat the boxes as containing the proportion of women among sexually active, fecund, women of reproductive age in each category, we can consider the contraceptive prevalence rate as $B + D$ and the unmet need for family planning as an effort to measure C. The rate A can then be found as $A = 1 - (B + D) - C$. Our estimate of the unwanted family planning rate is an effort to measure box B, which cannot be estimated from current data.
SOURCE: Senderowicz (2020).

1992; Hardee, Kumar, et al. 2014; Harris, Reichenbach, and Hardee 2016; Cahill et al. 2018). In particular, all women using family planning are defined as having a met need. Women using contraception and want no more children (or who are sterilized and not asked their fertility desires) are defined as having a met need for limiting, all other contraceptive users are defined as having a met need for spacing. This implies, for example, that the victims of forced sterilization will be counted as having a "met need for limiting." Women who want to become pregnant as soon as possible but are using family planning are defined as having a "met need for spacing." Both these categories of "met need" seem to be terminological inexactitudes.

An alternative approach is to construct measures based on contraceptive and reproductive autonomy (Upadhyay et al. 2014; Bradley et al. 2012; Karra 2021). Recent work by Senderowicz (2020) presents a framework of contraceptive autonomy by highlighting the importance of concordance between desired and actual family planning in the form of either autonomous contraceptive use or autonomous nonuse (Senderowicz 2020). Under this framework (presented 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) autonomous contraceptive nonuse (box A); (2) autonomous contraceptive use (box D); (3) unmet need for contraception (box C); or (4) unwanted contraceptive use (box B). Autonomous contraceptive use and autonomous contraceptive nonuse both reflect contraceptive concordance, whereby individual preferences for contraceptive use or nonuse are aligned with contraceptive behavior, resulting in a successful family planning outcome from a rights-based perspective. In contrast, discordance, which indicates a lack of autonomy, can be identified by (a) individuals who express a preference for using contraception but are unable to do so, resulting in an unmet need for contraception, or (b) individuals who are contraceptive users who express a preference for nonuse, resulting in unwanted contraceptive use.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

It is clear that the currently widely available measures of met and unmet need for family planning do not align precisely with the rights-based ideas of autonomous use, raising a concern that some "met need" for family planning may be due to coercion (Bendix et al. 2020; Hendrixson 2019). To date, however, empirical research on the unwanted use of family planning has been limited to a few small-scale qualitative studies (Senderowicz 2019; Yee and Simon 2011). We address this lack of evidence in this study by estimating the prevalence of unwanted family planning using a large dataset from low- and middle-income countries. We propose a definition for estimating unwanted family planning based on the use of contraception by women who want to have a child within the next nine months. This idea of inferring unwanted contraceptive use from fertility preferences follows the approach used in measuring the unmet need for family planning, which measures women with an apparent discordance between a stated desire for limiting or spacing births coupled with a lack of contraceptive use. Once we have a measure of unwanted family planning use, removing these women from the observed contraceptive prevalence rate leaves us with a measure of concordant, or wanted, contraceptive use.

Fertility preferences are already incorporated into the definition of an unmet need for family planning. Women who do not desire any more children and are not using family planning as defined as having an unmet need for limiting. Those who want another child, but want to wait at least two years before giving birth are defined as having an unmet need for spacing. We can use the same data to define women who want another child within the next nine months as having unwanted family planning.

There are two groups for whom the wantedness of family planning use is unclear. The nationally representative surveys that we use do not ask women who are sterilized about their fertility preferences; these women are currently assumed to not want more children and are classified as having a met need for limiting. This classification implies that any coercive or unwanted sterilizations will not be detected using the current methods of estimation. In addition, for women who are using a contraceptive method but report wanting to have a child in the next 10–23 months, the wantedness of family planning is unclear. Studies of fecundity have found that most couples who are trying to get pregnant are able to conceive within 6–12 months (Wesselink et al. 2017; Gnoth et al. 2003). This implies that most women who want to become pregnant within two years should not want to use family planning. However, women may believe that pregnancy is highly likely once family planning use is discontinued, and we cannot rule out that contraceptive use in women who want to have a child in between 10 months and two years is wanted. Given the uncertainty involved in defining wantedness for these groups, we take them as having potentially wanted family planning. We, therefore, define the rate of wanted family planning as the difference between the contraceptive prevalence rate and the unwanted family planning rate, taking all "potentially wanted" family planning as wanted.

While our approach has the advantage of being measurable with current data, it does not align exactly with the notion of nonautonomous use; we will undercount cases of coercion where women do not want to have a child but still do not want to use contraception, say, for religious reasons. We may also overcount women who want to have a child soon but also want to use contraception, though, in this case, the woman's desire for contraceptive use is likely to be for nonfamily planning reasons, such as preventing the transmission of sexually

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

transmitted disease; the contraceptive effect may, therefore, be unwanted. Our approach also does not adjust for uncertainty in women's preferences for future childbearing, where there may be ambiguity in the extent to which "wanting a child soon" is actualized. In addition, we only address the overall concordance of contraceptive use and not the concordance between a woman's actual and desired contraceptive method.

METHODS

Data and Analytic Sample

We combine data from the DHS surveys from 56 low- and middle-income countries between 2011 and 2019. When there are multiple DHS surveys within the period, we use the most recent available survey. The DHS surveys are nationally representative cross-sectional surveys that cover a range of health topics (USAID and ICF Macro International 2014). All surveys employ a two-stage cluster sampling design, stratifying by region and urban/rural residence, and randomly selecting clusters within each stratum, and interviewing about 20–30 women aged 15–49 in each cluster.

Unwanted Family Planning

We define the prevalence of unwanted family planning (UFP) as follows:

$$UFP = \frac{\begin{array}{c}\text{Married (or in a union), sexually active, fecund, women aged } 15-49 \text{ currently} \\ \text{using contraception who want another child within 9 months}\end{array}}{\text{Married (or in a union), sexually active, fecund, women aged } 15-49}$$

The denominator aims to capture the population of women who would be at risk of pregnancy and includes women who: (1) are either married or are in a sexual union; (2) report being sexually active within the last month; and (3) are fecund, and are, therefore, at risk of becoming pregnant. An advantage of this denominator in the definition is that it is the same denominator that is used for calculating the unmet need for family planning (Cleland, Harbison, and Shah 2014), thereby making the two rates directly comparable.

Women who are sterilized are not asked about their fertility preferences. Other women are first asked if they would like to have another child; if they report wanting another child, they are asked when they would like their next birth to occur. We take responses of wanting a child "now" or "soon" together with a numeric response of wanting a child within the next nine months to indicate unwanted family planning. We take all women who give an answer other than that they want more children as having wanted family planning, although, as we have discussed, this is problematic for women who are not asked about their fertility preferences.

In reviewing our definition, it is possible that women want to delay becoming pregnant in the immediate future but want to become pregnant later and still want to have a birth within the two-year window–this adds some uncertainty to defining when women's preferences for their next birth is considered to be "soon." For these reasons, we take a conservative view by focusing on women who are currently using a contraceptive method but who want to

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

have a birth within nine months. To be complete, however, we also establish a measure of "potentially" wanted family planning (PWFP), which is defined as:

$$PWFP = \frac{\begin{array}{c}\text{Married (or in a union), sexually active, fecund, women aged } 15-49 \\ \text{currently using contraception who are either not asked their fertility} \\ \text{preferences or want another child within } 10-23 \text{ months}\end{array}}{\text{Married (or in a union), sexually active, fecund, women aged } 15-49}$$

This prevalence measure captures the use of family planning among: (1) women whose reported fertility preferences fall in the "gray area" of wanting to delay becoming pregnant in the immediate future while still expressing a preference for having a birth within two years (in our case, within 10–23 months); and (2) women who were not asked their fertility preferences (e.g., women who are sterilized).

We define other contraceptive users, those who do not want any more children or who want to wait at least two years, as having definitely wanted family planning. This corresponds to those women who would have an unmet need for family planning if they were not using contraception. For simplicity, we place add women with "potentially" wanted family planning to those with definitely wanted family planning and count them as having wanted family planning when constructing estimates at the country level. However, it would be desirable to have better information on the preferences of these women.

RESULTS

Data from this sample of 56 DHS surveys provide us with a pooled analytic sample of 1,582,757 women. Table 1 presents the sample distribution of the 56 countries and surveyed years that are used in our analysis. In DHS surveys, women who want another child are asked how long from the date of the interview they would like to wait before the birth of the next child.

Table 2 presents the recorded responses to two questions about fertility preferences among contraceptive users in our sample. We find that 32.1 percent of contraceptive users in our sample say that they want to have another child, and 9.7 percent of women using contraception and who want to have a(nother) child say they want to have their (next) child "now," "soon," or within nine months from the time of the interview. An additional 12.7 percent of women want their (next) child within 24 months but more than 10 months from the time of the interview.

In the first part of Table 3, we apply the current approach to calculating the contraceptive prevalence rate and the unmet need for family planning to our sample. We also report the residual, comprised of those women whose nonuse of family planning aligns with their desires to have another child in less than two years. We estimate a contraceptive prevalence rate of 33.7 percent and an unmet need for family planning of 12.2 percent in our sample using the standard definitions, leaving 54.1 percent of women to be defined as being concordant in their nonuse of family planning. Our proposed new approach subdivides contraceptive prevalence into two categories. We estimate that 2.1 percent of women in the sample to have unwanted family planning. This implies a wanted contraceptive prevalence rate of 31.6 percent, which

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 1 Analytic sample by DHS survey and year

Survey	Country code	Country	Year	Sample
AF7	AF	Afghanistan	2015	29,461
AL7	AL	Albania	2018	15,000
AM7	AM	Armenia	2016	6,116
AO7	AO	Angola	2016	14,379
BD7	BD	Bangladesh	2018	20,127
BF6	BF	Burkina Faso	2010	17,087
BJ7	BJ	Benin	2018	15,928
BU7	BU	Burundi	2017	17,269
CD6	CD	Democratic Republic of the Congo	2014	18,827
CG6	CG	Republic of the Congo	2012	10,819
CI6	CI	Cote d'Ivoire	2012	10,060
CM7	CM	Cameroon	2018	14,677
CO7	CO	Colombia	2015	38,718
DR6	DR	Dominican Republic	2013	9,372
EG6	EG	Egypt	2014	21,762
ET7	ET	Ethiopia	2016	15,683
GA6	GA	Gabon	2012	8,422
GH6	GH	Ghana	2014	9,396
GM6	GM	Gambia	2013	10,233
GN7	GN	Guinea	2018	10,874
GU6	GU	Guatemala	2015	25,914
HN6	HN	Honduras	2012	22,757
HT7	HT	Haiti	2017	15,513
IA5	IA	India	2016	699,686
ID7	ID	Indonesia	2017	49,627
JO7	JO	Jordan	2018	14,689
KE6	KE	Kenya	2014	31,079
KH6	KH	Cambodia	2014	17,578
KM6	KM	Comoros	2012	5,329
KY6	KY	Kyrgyz Republic	2012	8,208
LB6	LB	Liberia	2013	9,239
LS6	LS	Lesotho	2014	6,621
ML7	ML	Mali	2018	10,519
MV7	MV	Maldives	2017	7,699
MW7	MW	Malawi	2016	24,562
MZ6	MZ	Mozambique	2011	13,745
NG7	NG	Nigeria	2018	41,821
NI6	NI	Niger	2012	11,160
NM6	NM	Namibia	2013	9,176
NP7	NP	Nepal	2016	12,862
PH7	PH	Philippines	2017	25,074
PK7	PK	Pakistan	2018	12,364
RW6	RW	Rwanda	2015	13,497
SL7	SL	Sierra Leone	2019	15,574
SN6	SN	Senegal	2011	15,688
TD6	TD	Chad	2015	17,719
TG6	TG	Togo	2014	9,480
TJ6	TJ	Tajikistan	2012	9,656
TL7	TL	East Timor	2016	12,607
TR4	TR	Turkey	2013	9,746
TZ7	TZ	Tanzania	2016	13,266
UG7	UG	Uganda	2016	18,506
YE6	YE	Yemen	2013	25,434
ZA7	ZA	South Africa	2016	8,514
ZM7	ZM	Zambia	2018	13,683
ZW7	ZW	Zimbabwe	2015	9,955

is the difference between the traditionally calculated contraceptive prevalence rate and the unwanted family planning rate.

In addition to the estimate of the prevalence of unwanted family planning, we also calculate the method mix being used by these women. Table 3 also shows that most women with unwanted family planning are using short-acting modern methods, with

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

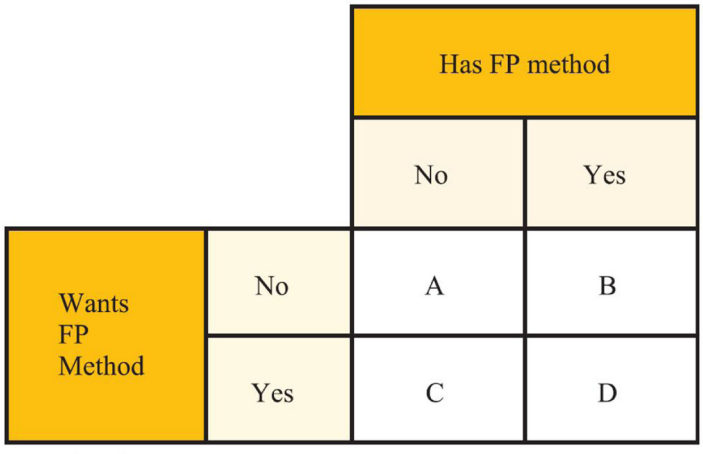
TABLE 2 Responses to wantedness and desired time to (next) birth among women who report wanting a(nother) child, among contraceptive users

	Response (%)	SD (%)	Definitely wanted family planning	Potentially wanted family planning	Unwanted family planning
a. Among all contraceptive users					
	Question: "Would you like to have a(nother) child, or would you like to have no (more) children?"				
Wants no (more) children	24.9	43.2	X		
Wants (more) children	32.1	46.7		SEE BELOW	
Other	0.5	7.1	X		
Not asked	38.1	48.6		X	
Don't know/Missing	4.4	20.5	X		
Number of observations	**528,899**				
b. Among contraceptive users who want (more) children					
	Question: "How long would you like to wait from now before the birth of (a/another) child?"				
Now/Soon	8.8	28.3			X
Numeric ⇐ 9 months	0.9	9.4			X
10 months ⇐ Numeric ⇐ 23 months	12.7	33.3		X	
Numeric >= 24 months	67.7	46.8	X		
Other	6.4	24.5	X		
Don't Know/Missing	3.5	18.4	X		
Number of observations	**132,087**				

NOTE: In Panels A and B, Other includes "cannot get pregnant," "wants after marriage," and "other" responses. Response rates are unweighted.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 3 Concordance of family planning use and fertility preferences, analytic sample



SOURCE: Senderowicz (2020)

Senderowicz (2020) Classification	Standard approach	Pct. (%)
B+D	Met need for family planning (contraceptive prevalence)	33.7
C	Unmet need for family planning	12.2
A	Residual–concordant nonuse	54.1
	New approach	
D	Wanted contraceptive prevalence	31.6
B	Unwanted family planning	2.1
C	Unmet need for family planning	12.2
A	Residual–concordant nonuse	54.1
	Method mix for unwanted family planning	
	Unwanted family planning	2.1
	Traditional methods	0.6
	Modern methods	1.5
	Modern short-acting methods	1.3
	Modern long-acting methods	0.3
	N	**1,546,987**

NOTE: Rates are for the full sample of women from 56 countries, unweighted. Unwanted family planning is defined as the proportion of sexually active, fecund, and married (or in a sexual union) women aged 15–49 who want to have a child within the next nine months and who are currently using contraception. Modern short-acting modern methods include: pill, injectables, condoms (male, female), diaphragm, SDM, LAM, emergency contraception, and foam/jelly. Modern long-acting modern methods include: implants and IUDs. Traditional methods include periodic abstinence, withdrawal, and other traditional methods. The leftmost column assigns each calculated prevalence according to the classification proposed by Senderowicz (2020). If we treat the boxes as containing the proportion of women of sexually active, fecund, and married (or in a sexual union) women reproductive age in each category, we would define the contraceptive prevalence rate as the sum $B + D$ and the unmet need for family planning as the prevalence depicted by box C. The prevalence of concordant nonuse, depicted by box A, can then be found as $A = 1 - (B + D) - C$. Our measure of unwanted family planning is an estimate of the prevalence depicted by box B.

small rates of unwanted family planning use among traditional method and long-acting method users.

Table 4 presents detailed data on the method mix by fertility preferences in our analytic sample, comparing women with defiantly wanted family planning and who want to either limit or delay their next birth by at least two years in column (1) with the method mix among unwanted family planning users in column (2). We also report the difference in the rates between the two groups in column (3) and the p value for this difference in column (4). We see that compared to women who want to limit or space for at least two years, women with unwanted family planning are much more likely to be using condoms, withdrawal, and periodic abstinence. These women are also less likely to be using injectables and implants, while IUD use is similar across the two groups.

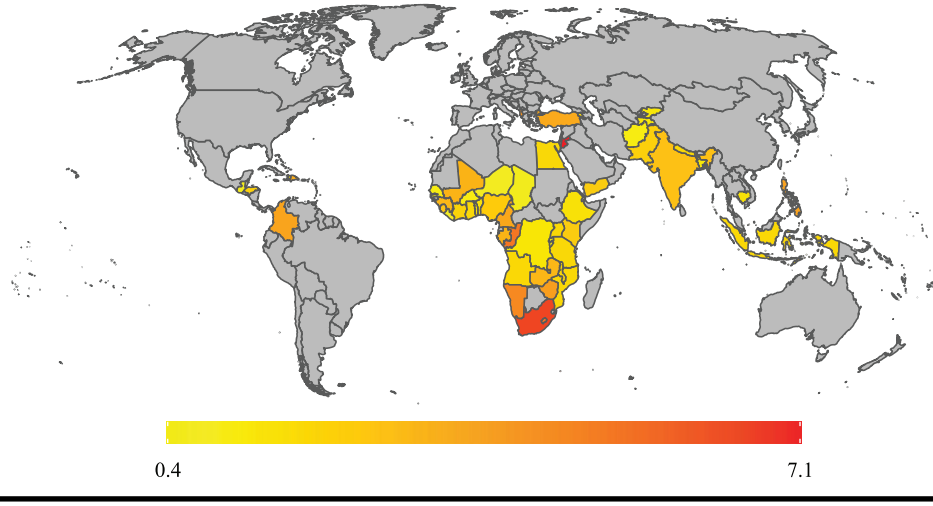
17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 4 Contraceptive method mix by fertility preferences, analytic sample

	(1) Definitely wanted family planning	(2) Unwanted family planning	(3) Difference (2) – (1)	(4) p value
Modern long-acting				
Implants	0.085	0.057	−0.028***	0.000
IUD	0.064	0.063	−0.002	0.501
Modern short-acting				
Pill	0.197	0.188	−0.008**	0.027
Injectables	0.258	0.152	−0.106***	0.000
Male condom	0.189	0.232	0.043***	0.000
LAM	0.019	0.015	−0.003***	0.009
SDM	0.003	0.004	0.001**	0.038
Other modern method	0.017	0.009	−0.009***	0.000
Traditional				
Periodic abstinence	0.072	0.122	0.050***	0.000
Withdrawal	0.088	0.145	0.057***	0.000
Other traditional methods	0.007	0.009	0.003***	0.001
N	**89,356**	**12,845**		

NOTES: Methods with fewer than 100 observations in total between the two groups were, therefore, excluded. For this reason, columns (1) and (2) do not sum up to 100 percent. Definitely wanted family planning is used by women who say they do not want another child or if they want another child wish to wait at least two years. Unwanted family planning is used by women who say they want another child within nine months (or now/soon). In contrast to the aggregate statistics that are presented in Table 3, we do not include "Don't Know" and missing observations as part of our definitely wanted family planning definition.
$***p < 0.01$; $**p < 0.05$; $*p < 0.1$.

FIGURE 2 Global map of unwanted family planning use (%)



NOTE: Based on estimates that are presented in Table 3.

We now turn to country-level estimates of unwanted family planning. Table 5 presents estimates at the country level; all estimates are weighted to make each sample representative of the national population in that surveyed year. We observe considerable variation in unwanted family planning rates across our sample of 56 countries, with rates ranging between 0.4 percent in the Gambia and 7.1 percent in Jordan. Figure 2 shows a map of the distribution of the unmet need for family planning across countries, while Figure 3 shows a similar map for the distribution of unwanted family planning across countries.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 5 Unmet need and unwanted family planning use, by country and year

Country	Year	Unmet need for family planning (%)	Contraceptive prevalence rate (%)	Wanted family planning (%)	Unwanted family planning (%)[a]						Potentially wanted family planning (%)[e]
					Any method		Traditional	Modern	Modern short-acting[c]	Modern long-acting[d]	
					Mean	SE[b]					
Afghanistan	2015	23.4	21.9	20.9	1.0	0.15	0.2	0.8	0.7	0.1	5.2
Albania	2018	11.0	33.2	29.1	4.2	0.41	4.0	0.1	0.1	0.0	2.0
Armenia	2016	7.7	36.7	35.0	1.7	0.29	0.9	0.8	0.7	0.1	5.0
Angola	2016	24.3	13.3	11.5	1.8	0.24	0.2	1.7	1.6	0.0	1.7
Bangladesh	2018	10.4	58.3	57.2	1.1	0.14	0.2	0.9	0.9	0.0	11.2
Burkina Faso	2010	19.5	15.3	14.3	1.0	0.10	0.1	0.8	0.7	0.1	3.4
Benin	2018	24.9	14.4	12.9	1.5	0.12	0.4	1.2	0.7	0.4	2.8
Burundi	2017	16.0	17.9	16.8	1.1	0.12	0.2	0.9	0.6	0.3	2.5
Democratic Republic of the Congo	2014	20.0	19.3	18.0	1.3	0.14	0.9	0.4	0.4	0.0	4.4
Republic of the Congo	2012	12.6	44.3	39.2	5.1	0.38	3.3	1.8	1.8	0.0	8.2
Cote d'Ivoire	2012	21.9	19.7	17.9	1.9	0.21	1.1	0.7	0.7	0.0	3.6
Cameroon	2018	16.2	19.5	16.0	3.5	0.22	0.8	2.7	2.3	0.4	3.0
Colombia	2015	4.3	61.1	57.4	3.6	0.27	0.7	2.9	1.9	0.9	30.4
Dominican Republic	2013	7.9	55.1	51.8	3.3	0.47	0.5	2.8	2.5	0.3	35.3
Egypt	2014	9.4	55.0	53.4	1.7	0.19	0.1	1.6	0.7	0.9	6.7
Ethiopia	2016	14.0	25.3	23.8	1.5	0.19	0.1	1.4	1.1	0.4	4.8
Gabon	2012	18.8	33.6	30.6	3.0	0.37	1.1	1.9	1.9	0.0	6.3
Ghana	2014	19.2	22.8	21.1	1.7	0.21	0.7	1.0	0.8	0.2	4.6
Gambia	2013	16.7	7.1	6.8	0.4	0.09	0.1	0.3	0.3	0.0	2.1
Guinea	2018	16.0	11.8	8.9	2.9	0.22	0.0	2.9	2.3	0.6	1.4
Guatemala	2015	7.7	39.4	38.9	0.5	0.07	0.2	0.3	0.3	0.0	19.9
Honduras	2012	6.0	48.9	46.9	2.0	0.15	0.6	1.4	1.3	0.2	22.0
Haiti	2017	24.0	24.1	22.9	1.2	0.15	0.2	1.0	0.9	0.1	2.2
India	2016	9.0	40.8	38.2	2.6	0.07	0.9	1.7	1.5	0.2	29.9
Indonesia	2017	5.4	46.0	44.2	1.8	0.10	0.4	1.4	1.1	0.2	7.0
Jordan	2018	13.5	48.1	41.1	7.1	0.57	2.6	4.4	2.0	2.4	7.1
Kenya	2014	10.4	42.6	40.4	2.2	0.23	0.5	1.8	1.5	0.3	7.6
Cambodia	2014	1.0	38.5	37.1	1.5	0.17	0.6	0.8	0.7	0.1	6.1
Comoros	2012	20.0	13.7	12.8	0.9	0.16	0.3	0.6	0.5	0.1	1.8

(Continued on next page)

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 5 (Continued)

Country	Year	Unmet need for family planning (%)	Contraceptive prevalence rate (%)	Wanted family planning (%)	Unwanted family planning (%)[a]						
					Any method		Traditional	Modern	Modern short-acting[c]	Modern long-acting[d]	Potentially wanted family planning (%)[e]
					Mean	SE[b]					
Kyrgyz Republic	2012	11.8	24.4	23.2	1.2	0.17	0.3	0.9	0.3	0.6	5.8
Liberia	2013	25.2	21.7	21.2	0.6	0.12	0.2	0.4	0.3	0.0	1.5
Lesotho	2014	10.7	48.9	43.7	5.1	0.52	0.1	5.1	5.1	0.0	5.7
Mali	2018	19.8	16.2	13.2	3.0	0.22	0.2	2.8	1.4	1.5	3.1
Maldives	2017	22.4	13.3	12.3	1.1	0.26	0.5	0.6	0.6	0.0	5.1
Malawi	2016	12.8	46.0	44.2	1.8	0.15	0.1	1.7	1.4	0.4	12.8
Mozambique	2011	18.2	12.3	10.5	1.8	0.17	0.0	1.8	1.8	0.0	2.2
Nigeria	2018	13.8	14.3	12.0	2.3	0.12	0.9	1.4	1.0	0.4	2.2
Niger	2012	14.0	12.5	11.8	0.7	0.10	0.1	0.6	0.6	0.0	5.1
Namibia	2013	7.6	50.2	45.7	4.5	0.36	0.1	4.4	4.4	0.0	10.9
Nepal	2016	17.9	40.8	38.9	1.8	0.25	0.9	0.9	0.8	0.1	17.3
Philippines	2017	10.1	33.6	29.9	3.7	0.24	1.3	2.4	2.2	0.2	6.3
Pakistan	2018	16.4	33.1	31.1	2.0	0.26	0.7	1.3	1.1	0.1	12.1
Rwanda	2015	9.6	30.9	30.4	0.5	0.08	0.1	0.4	0.3	0.1	4.0
Sierra Leone	2019	19.0	24.3	21.8	2.5	0.19	0.1	2.4	1.6	0.8	2.1
Senegal	2011	19.9	9.6	8.6	1.0	0.13	0.1	0.9	0.7	0.1	1.6
Chad	2015	17.8	5.4	4.8	0.5	0.08	0.1	0.4	0.3	0.1	1.4
Togo	2014	24.4	19.3	17.8	1.5	0.17	0.4	1.1	1.0	0.1	3.1
Tajikistan	2012	15.6	18.9	17.8	1.1	0.19	0.2	0.9	0.4	0.5	2.0
East Timor	2016	13.7	16.1	13.0	3.0	0.32	0.3	2.8	2.2	0.6	2.6
Turkey	2013	5.5	51.0	47.6	3.4	0.31	1.7	1.7	1.2	0.5	12.2
Tanzania	2016	14.7	32.4	30.7	1.7	0.17	0.6	1.1	1.0	0.2	8.8
Uganda	2016	18.0	30.3	28.4	1.8	0.16	0.4	1.5	1.3	0.2	7.0
Yemen	2013	27.3	31.5	29.2	2.2	0.19	0.5	1.7	1.3	0.4	5.5
South Africa	2016	10.2	48.2	41.7	6.4	0.55	0.0	6.4	5.3	0.3	6.4
Zambia	2018	12.8	35.4	32.5	2.9	0.25	0.1	2.9	2.5	0.4	5.6
Zimbabwe	2015	6.3	48.6	44.8	3.8	0.28	0.2	3.6	3.1	0.5	8.1

NOTE: Summary statistics are weighted using DHS sampling weights at the survey (country-year) level.

[a] Defined as the proportion of women who want to have a child within the next nine months and who are currently using FP.

[b] SE is the weighted standard error for unwanted family planning, which is calculated using the weighted mean (proportion) of unwanted family planning and the population weights at the survey (country-year) level.

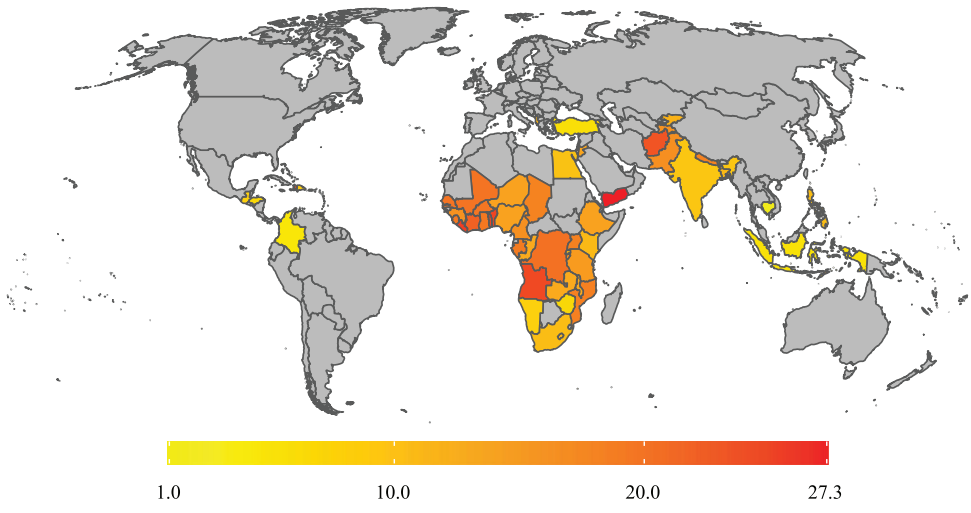
[c] According to DHS-IV and later, short-acting modern methods include: pill, injectables, condoms (male, female), diaphragm, SDM, LAM, emergency contraception, and foam/jelly.

[d] According to DHS-IV and later, long-acting modern methods include: implants and IUDs.

[e] Defined as the proportion of women who are currently using FP and who (1) want to have a child within the next 10–23 months, or (2) were never asked about their fertility preferences.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

FIGURE 3 Global map of unmet need for family planning (%)



NOTE: Based on estimates that are presented in Table 3.

TABLE 6 Method mix by wantedness among contraceptive users, Jordan

	(1) Definitely wanted family planning	(2) Unwanted family planning	(3) Difference (2) – (1)	(4) p value
Modern long-acting				
Implants	0.004	0.001	−0.003	0.294
IUD	0.290	0.344	0.054	0.270
Modern short-acting				
Pill	0.190	0.135	−0.055*	0.057
Injectables	0.013	0.008	−0.005	0.658
Male condom	0.106	0.102	−0.004	0.896
LAM	0.058	0.038	−0.02	0.259
Traditional				
Periodic abstinence	0.017	0.008	−0.009	0.278
Withdrawal	0.319	0.362	0.043	0.369
N	**1,146**	**396**		

NOTES: Weighted statistics are presented using DHS sampling weights at the survey (country-year) level. Some methods had too few observations to allow for a comparison between the two groups and were, therefore, excluded. For this reason, columns (1) and (2) do not sum up to 100 percent. In contrast to the aggregate statistics that are presented in Table 3, we do not include "Don't Know" and missing observations as part of our definitely wanted family planning definition.
$***p < 0.01$; $**p < 0.05$; $*p < 0.1$.

In Tables 6 and 7, we examine the cases of Jordan and South Africa, the two countries with the highest estimated rates of unwanted family planning, in more detail. Most unwanted family planning in Jordan can be attributed to withdrawal or IUD use, with smaller contributions from pills and condoms. The absolute number of users in national calculations is small, and it is difficult to determine if the contraceptive method mix is statistically different between those women who want to delay their next birth at least two years and those with unwanted family planning. In South Africa, we observe that unwanted family planning can largely be attributed to condom use, with less use of the two-month injectable, which is distinguished from the more common three-month injectable, among unwanted family planning users relative to wanted family planning users (Table 7).

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

TABLE 7 Method mix by wantedness among contraceptive users, South Africa

	(1) Definitely wanted family planning	(2) Unwanted family planning	(3) Difference (2) – (1)	(4) p value
Modern long-acting				
Implants	0.078	0.046	−0.032	0.108
IUD	0.017	0.005	−0.012	0.177
Modern short-acting				
Pill	0.102	0.132	0.031	0.215
Injectables, three-month	0.280	0.269	−0.010	0.772
Injectables, two-month	0.224	0.128	−0.096***	0.002
Male condom	0.271	0.406	0.135***	0.000
Female condom	0.005	0.005	−0.001	0.926
Emergency contraception	0.002	0.000	−0.002	0.543
Traditional				
Periodic abstinence	0.003	0.000	−0.003	0.389
Withdrawal	0.019	0.009	−0.010	0.340
N	**590**	**219**		

NOTES: Weighted statistics are presented using DHS sampling weights at the survey (country-year) level. Some methods had too few observations to allow for a comparison between the two groups and were, therefore, excluded from the table. For this reason, columns (1) and (2) do not sum up to 100 percent. In contrast to the aggregate statistics that are presented in Table 3, we do not include "Don't Know" and missing observations as part of our definitely wanted family planning definition.
$***p < 0.01$; $**p < 0.05$; $*p < 0.1$.

DISCUSSION

Limitations

Our study has several limitations. A major limitation of our analysis is that we rely on existing survey data rather than on data that are specifically collected with a rights-based perspective and approach in mind. As a result, we focus on the concordance between a woman's contraceptive use and her fertility preferences rather than on her actual desire to use contraception. This is similar to the approach taken in the measurement of unmet need for family planning, and both approaches could be (and have been) criticized for not fully measuring desired contraceptive use (Bradley and Casterline 2014; Cleland, Harbison, and Shah 2014). Another measurement concern is that the DHS surveys do not elicit fertility preferences from women who report being sterilized; these women are all reported as having a met need for limiting. Given the history of forced and coerced sterilizations of women worldwide (Open Society Foundations 2011), it is quite possible that some of these sterilizations were coercive and are not aligned with women's true fertility preferences. At present, we have no way of observing this potential discordance in the data; as a result, these women are currently counted as having (potentially) wanted family planning in our definition. Given that over half of all contraceptive users in our data are sterilized (Table 2), it may be more appropriate to treat sterilized women as a separate third category for whom their undocumented preferences currently reflect an ambiguous and potentially unwanted use of family planning.

An issue that we can currently say very little about is why there is unwanted family planning. In DHS surveys, women who indicate having an unmet need for family planning during the interview are subsequently queried as to why they are not using family planning, given their apparent need for contraception. These data have proved to be useful for understanding and developing policies and informing programs that address the unmet need for family planning (United Nations 2011, 2015; Unstats 2010). At present, no follow-up questions are

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

asked to women with unwanted family planning, thereby making it difficult for us to ascribe causes to this discordance, although our data on method mix are suggestive of possible determinants.

Within our approach, there are several points at which we could have made different decisions as to how we define unwanted family planning. For example, a case could be made for imposing the cutoff to be wanting the next birth in less than 24 months, which would directly parallel the current cutoff used to measure unmet need and would bifurcate the distribution of preferences cleanly into two groups. We have adopted a more conservative cutoff of nine months. However, as Table 2 shows, 12.7 percent of women who are using contraception and who want another birth report a desire to delay their (subsequent) birth by 10–23 months. There is also an issue in how to treat non-numeric responses to the question eliciting a woman's desired timing of her (next) birth. We believe that it is reasonable to include "soon" and "now" to indicate unwanted family planning but have been conservative in treating all other non-numeric responses as being compatible with wanted family planning, which may, therefore, lead to an undercounting of unwanted family planning.

There are a number of potential concerns over measurement using reported responses to questions on fertility preferences. Rather than having well-defined preferences, a significant proportion of women may be ambivalent about their fertility intentions (Sennott and Yeatman 2018), with many women reporting that they do not know when they want their next child. In addition, fertility preferences may not be stable over ever fairly short time intervals, complicating estimation and inference (Sennott and Yeatman 2018; Johnson-Hanks et al. 2018). These issues have been studied extensively in terms of using fertility preferences to measure the unmet need for family planning and unwanted fertility (Casterline and El-Zeini 2007), and similar criticisms could be levied against our measure. There is a large literature on the conceptual underpinning and measurement of the unmet need for family planning that has led to the idea being refined over time (Machiyama et al. 2017; Cleland, Harbison, and Shah 2014; Bradley et al. 2012). Given that our approach is the first attempt to quantify the prevalence of unwanted family planning, we expect that our proposed measure will be subject to future revision.

CONCLUSION

Conceptually, there are two possible violations of the rights-based approach to family planning and a lack of concordance between women's desired and actual use of family planning: (1) women who want to use contraception may not be able to do so; and (2) women may be using contraception when they do not want to use a method. The unmet need for family planning can be thought of as a measure of one type of discordance, while our proposed measure of unwanted family planning can be thought of as a complementary indicator for the other type of discordance. Quantitatively, we find the unmet need for family planning to be, by far, the larger problem, given its significantly higher prevalence. However, the estimates for unwanted family planning, as measured by our proposed approach, are not zero and are surprisingly high in a number of countries.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

While the surveys that we use do not probe the reasons behind unwanted family planning, the method mix that we observe in our estimation offers some insight. The large-scale use of condoms, withdrawal, and periodic abstinence among unwanted family planning users, which are methods that involve male participation, is consistent with the idea that this contraceptive use may reflect men's fertility preferences and their demand for contraception rather than women's own preferences. Following the approach for measuring the unmet need for family planning, we take a woman's reported perspective on the concordance of fertility preferences and contraceptive use. While we could have incorporated men's perspectives and fertility preferences, this approach would (1) raise the question of the extent to which taking a couple's perspective is indeed compatible with promoting women's autonomy and decision-making over her fertility and family planning use; and (2) introduce new subgroups of classifications of wantedness and unmet need when couples have discordant fertility preferences (Pearson and Becker 2014).

The widespread use of condoms by women with unwanted family planning is also consistent with a desire to protect against HIV and other sexually transmitted diseases, while the contraceptive effect from this use may be unwanted. This may be particularly relevant in the case of countries like South Africa, where the HIV prevalence rate is high and where condom use is encouraged to prevent the spread of HIV. While condom use may be desirable to prevent HIV, there may be a cost in the form of unwanted family planning among women who want to have a child soon, whereby the contraceptive effect of the condom may be unwanted.

Most worrying is the relatively large use of IUDs by women with unwanted family planning, particularly in Jordan, where it explains a large fraction of the high unwanted family planning rate. IUD use is a large part of the method mix in Jordan for women who defiantly want family planning. There are several qualitative studies finding that women in different settings have difficulty accessing removal services for long-acting contraception (Britton et al. 2021; Higgins, Kramer, and Ryder 2016; Amico et al. 2016), and this may be the explanation for the use of IUDs by women who want to have a new birth soon. In other settings, unwanted contraceptive use may be, in part, due to women's reluctance or ambivalence to act on a desire to have a birth soon (Sennott and Yeatman 2018; Yoo, Guzzo, and Hayford 2014). In addition, it would be necessary to examine the dynamics, and particularly the temporal lag, between a woman's preference to not use contraception and her (in)ability to act on this preference. Understanding these dynamics would require a deeper exploration as to how method discontinuation may be related to unwanted use.

We recommend that future survey efforts and final reports present disaggregated statistics of contraceptive use by wantedness rather than defining all contraceptive users as having a "met need." We also recommend that women who are using contraception and who want to have a birth within the next nine months, which is currently reported as having a met need for spacing, be reported as having unwanted family planning in future analyses. In addition to our proposed changes to reporting, we recommend that the DHS and other reproductive health surveys take greater steps to probe the extent of concordance in fertility preferences and contraceptive use so that our measurement and understanding of unwanted, and potentially wanted, family planning can be improved. First, women who report being sterilized should be followed up to determine if they did so voluntarily and if their inability to have children indeed reflects their fertility preferences. No available DHS

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

survey has elicited fertility preferences for sterilized women, and it is, therefore, not possible to calculate prevalence estimates of unwanted family planning for this subgroup; as a result, we are likely to be undercounting unwanted family planning. Second, when women who are using contraception report wanting to have a birth soon or within the next nine months, there should be a process for following up with them that identifies the reasons for their use. We have made some suggestions as to why these women may be using contraception, but it would be useful to conduct both qualitative and quantitative studies that identify the underlying motivations for contraceptive use among women who want to have a child within nine months. These studies should also probe women's understanding of wanting a birth "soon" to ensure we are capturing the full range of reasons for their use. Quantifying the scale and qualifying the causes of this issue are a necessary first step in determining what policies and intervention strategies can be adopted by programs to rectify it.

FUNDING

The authors received no financial support for the research, authorship, and/or publication of this article.

COMPETING INTERESTS

We declare that no competing interests exist, and all errors are our own.

DATA AVAILABILITY STATEMENT

All data that are used for this study are available for free download after registering with the DHS Program at http://dhsprogram.com/data/.

REFERENCES

Amico, Jennifer R., Ariana H. Bennett, Alison Karasz, and Marji Gold. 2016. "'She Just Told Me to Leave It': Women's Experiences Discussing Early Elective IUD Removal." *Contraception* 94(4): 357–361.

Bendix, Daniel, Ellen E. Foley, Anne Hendrixson, and Susanne Schultz. 2020. "Targets and Technologies: Sayana Press and Jadelle in Contemporary Population Policies." *Gender, Place & Culture* 27(3): 351–369.

Biggs, M. Antonia, Lucia Tome, Aisha Mays, Shelly Kaller, Cynthia C. Harper, and Lori Freedman. 2020. "The Fine Line Between Informing and Coercing: Community Health Center Clinicians' Approaches to Counseling Young People About IUDs." *Perspectives on Sexual and Reproductive Health* 52(4): 245–252.

Blanc, Ann K., and Amy O. Tsui. 2005. "The Dilemma of Past Success: Insiders' Views on the Future of the International Family Planning Movement." *Studies in Family Planning* 36(4): 263–276.

Bongaarts, John, and Steven W. Sinding. 2009. "A Response to Critics of Family Planning Programs." *International Perspectives on Sexual and Reproductive Health* 35(1): 39–44.

Bradley, Sarah E. K., and John B. Casterline. 2014. "Understanding Unmet Need: History, Theory, and Measurement." *Studies in Family Planning* 45(2): 123–150.

Bradley, Sarah E. K., Trevor Croft, Joy Fishel, and Charles Westoff. 2012. *Revising Unmet Need for Family Planning*. DHS Analytical Studies No. 25. Calverton, MD: ICF International.

Britton, Laura E., Caitlin R. Williams, Dickens Onyango, Debborah Wambua, and Katherine Tumlinson. 2021. "'When It Comes to Time of Removal, Nothing Is Straightforward': A Qualitative Study of Experiences with Barriers to Removal of Long-Acting Reversible Contraception in Western Kenya." *Contraception: X* 3(January): 100063.

Cahill, Niamh, Emily Sonneveldt, John Stover, Michelle Weinberger, Jessica Williamson, Chuchu Wei, Win Brown, and Leontine Alkema. 2018. "Modern Contraceptive Use, Unmet Need, and Demand Satisfied among Women of Reproductive Age Who Are Married or in a Union in the Focus Countries of the Family Planning 2020 Initiative: A Systematic Analysis Using the Family Planning Estimation Tool." *Lancet* 391(10123): 870–882.

Casterline, John B., and Laila O. El-Zeini. 2007. "The Estimation of Unwanted Fertility." *Demography* 44(4): 729–745.

Cates, Willard, and Baker Maggwa. 2014. "Family Planning since ICPD — How Far Have We Progressed?" *Contraception* 90(6): S14–S21.

Cleland, John, Sarah Harbison, and Iqbal H. Shah. 2014. "Unmet Need for Contraception: Issues and Challenges." *Studies in Family Planning* 45(2): 105–122.

Connelly, M. J. 2008. *Fatal Misconception: The Struggle to Control World Population*. Cambridge, MA: Harvard University Press.

DHS Program. 2021. Guide to DHS Statistics: Need and Demand for Family Planning. Available from: https://dhsprogram.com

Gnoth C., Godehardt D., Godehardt E., Frank-Herrmann P., Freundl G. 2003. "Time topregnancy: results of the German prospective study and impact on the managementof infertility." *Hum Reprod* 18: 1959–66.

Hardee, Karen, Shannon Harris, Mariela Rodriguez, Jan Kumar, Lynn Bakamjian, Karen Newman, and Win Brown. 2014. "Achieving the Goal of the London Summit on Family Planning By Adhering to Voluntary, Rights-Based Family Planning: What Can We Learn from Past Experiences with Coercion?" *International Perspectives on Sexual and Reproductive Health* 40(4): 206–214.

Hardee, Karen, Jan Kumar, Karen Newman, Lynn Bakamjian, Shannon Harris, Mariela Rodríguez, and Win Brown. 2014. "Voluntary, Human Rights–Based Family Planning: A Conceptual Framework." *Studies in Family Planning* 45(1): 1–18.

Harris, Shannon, Laura Reichenbach, and Karen Hardee. 2016. "Measuring and Monitoring Quality of Care in Family Planning: Are We Ignoring Negative Experiences?" *Open Access Journal of Contraception* 7(May): 97–108.

Hendrixson, Anne. 2019. "Population Control in the Troubled Present: The '120 by 20' Target and Implant Access Program." *Development and Change* 50(3): 786–804.

Higgins, Jenny A., Renee D. Kramer, and Kristin M. Ryder. 2016. "Provider Bias in Long-Acting Reversible Contraception (LARC) Promotion and Removal: Perceptions of Young Adult Women." *American Journal of Public Health* 106(11): 1932–1937.

Howett, Rebecca, Emily A. Krogstad, Opelo Badubi, Alida M. Gertz, Caitlin Bawn, Aamirah Mussa, Tiroyaone Kgaswanyane, Sifelani Malima, Tshego Maotwe, Lesego Mokganya, Doreen Ramogola-Masire and Chelsea Morroni. 2021. "Experiences of Accessing and Providing Contraceptive Implant Removal Services in Gaborone, Botswana: A Qualitative Study Among Implant Users and Healthcare Providers." *Frontiers in Global Women's Health* 2(June): 684694.

Jain, Anrudh, Judith Bruce, and Barbara Mensch. 1992. "Setting Standards of Quality in Family Planning Programs." *Studies in Family Planning* 23(6): 392–395.

Johnson-Hanks, Jennifer, Joan Hamory-Hicks, Edward Miguel, and Maximilian W. Mueller. 2018. "Reflecting on Major Life Decisions: Changing Your Mind and Not Recalling It."

Karra, Mahesh. 2021. "Measurement of Unmet Need for Family Planning: A Counterfactual Approach." Boston, MA.

Machiyama, Kazuyo, John B. Casterline, Joyce N. Mumah, Fauzia Akhter Huda, Francis Obare, George Odwe, Caroline W. Kabiru, Sharifa Yeasmin, and John Cleland. 2017. "Reasons for Unmet Need for Family Planning, with Attention to the Measurement of Fertility Preferences: Protocol for a Multi-Site Cohort Study." *Reproductive Health* 14(1): 23.

Open Society Foundations, Ntokozo. 2011. *Against Her Will: Forced and Coerced Sterilization of Women Worldwide*. Washington, DC: Open Society Foundations.

Pearson, Erin, and Stan Becker. 2014. "Couples' Unmet Need for Family Planning in Three West African Countries." *Studies in Family Planning* 45(3): 339–359.

Senderowicz, Leigh. 2019. "'I Was Obligated to Accept' A Qualitative Exploration of Contraceptive Coercion." *Social Science and Medicine* 239(112531): 10.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Senderowicz, Leigh. 2020. "Contraceptive Autonomy: Conceptions and Measurement of a Novel Family Planning Indicator." *Studies in Family Planning* 51(2): 161–176.

Sennott, Christie, and Sara Yeatman. 2018. "Conceptualizing Childbearing Ambivalence: A Social and Dynamic Perspective." *Journal of Marriage and Family* 80(4): 888–901.

Silverman, Jay G., Sneha Challa, Sabrina C. Boyce, Sarah Averbach, and Anita Raj. 2020. "Associations of Reproductive Coercion and Intimate Partner Violence with Overt and Covert Family Planning Use among Married Adolescent Girls in Niger." *EClinicalMedicine* 22(May): 100359.

Starrs, Ann M., Alex C. Ezeh, Gary Barker, Alaka Basu, Jane T. Bertrand, Robert Blum, Awa M. Coll-Seck, Anand Grover, Laura Laski, Monica Roa, Zeba A. Sathar, Lale Say, Gamal I. Serour, Susheela Singh, Karin Stenberg, Marleen Temmerman, Ann Biddlecom, Anna Popinchalk, Cynthia Summers and Lori S. Ashford. 2018. "Accelerate Progress—Sexual and Reproductive Health and Rights for All: Report of the Guttmacher–Lancet Commission." *Lancet* 391(10140): 2642–2692.

UNFPA. 2014. *Programme of Action of the International Conference on Population and Development*. New York: United Nations Population Fund.

United Nations. 2011. *The Millennium Development Goals Report 2011*. Geneva: United Nations.

United Nations. 2015. *Millennium Development Goals 4 and 5*. World Health Organization.

Unstats. 2010. "Millennium Indicators." http://unstats.un.org. accessed: 22 May 2022.

Upadhyay, Ushma D., Shari L. Dworkin, Tracy A. Weitz, and Diana Greene Foster. 2014. "Development and Validation of a Reproductive Autonomy Scale." *Studies in Family Planning* 45(1): 19–41.

USAID, and ICF Macro International. 2014. "The DHS Program."

Uysal, Jasmine, Jamila K. Stockman, Elizabeth Miller, Teresita Rocha-Jimenez, Gudelia M. Rangel, Alejandra Padilla Mercado, and Argentina E. Servin. 2020. "'At Least I Didn't Get Raped': A Qualitative Exploration of IPV and Reproductive Coercion among Adolescent Girls Seeking Family Planning in Mexico." *Journal of Interpersonal Violence* 37(7–8): NP4740–NP4761.

Westoff, C.F. 2006. New Estimates of Unmet Need and the Demand for Family Planning. p. 83.

Wesselink A. K., Rothman K. J., Hatch E. E., Mikkelson E. M., Sorensen H. T., Wise L. A. 2017. "Age and fecundabilityin a North American preconception cohort study." *Am J Obstet Gynecol* 217: 667.e1–667.e8.

Yee, Lynn M., and Melissa Simon A. 2011. "Perceptions of Coercion, Discrimination and Other Negative Experiences in Postpartum Contraceptive Counseling for Low-Income Minority Women." *Journal of Health Care for the Poor & Underserved* 22(4): 1387–1400.

Yoo, Sam Hyun, Karen Benjamin Guzzo, and Sarah R. Hayford. 2014. "Understanding the Complexity of Ambivalence Toward Pregnancy: Does It Predict Inconsistent Use of Contraception?" *Biodemography and Social Biology* 60(1): 49–66.

17284465, 2023, 1, Downloaded from https://onlinelibrary.wiley.com/doi/10.1111/sifp.12230 by Bill and Melinda Gates Foundation, Wiley Online Library on [20/03/2024]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License