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PMA2020 METHODOLOGICAL REPORT NO. 4:

METHOD AWARENESS QUESTIONS AND WOMEN'S REPORT FOR MODERN METHOD USE IN SURVEYS

PMA2020 Methodological Report

Title: Method Awareness Questions and Women's Report for Modern Method Use in Surveys

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Acronyms

FP2020: Family Planning 2020

PMA2020: Performance Monitoring and Accountability 2020

mCPR: Modern contraceptive prevalence rate

SDGs: Sustainable Development Goals

Preface

Performance Monitoring and Accountability 2020 (PMA2020) employs an innovative survey approach to gather population data on family planning; water, sanitation, and hygiene; and other health issues. Data are collected at both the household and health facility levels via mobile phones through a network of local female data collectors, known as resident enumerators, stationed throughout the country.

PMA2020 generates high quality, rapid-turnaround data. As such, PMA2020 continues to assess, revise, and publicize the methodology with which the data are gathered. The *Methodological Report* series aims to examine various issues relevant for survey data quality to enhance the understanding and analysis of PMA2020 survey data for researchers, policy makers, and survey specialists.

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Scott Radloff, PhD
Director, PMA2020

Abstract

Accurate estimates of contraceptive use are critical for monitoring and evaluating family planning programs. Data typically come from various population-based surveys that employ their own questionnaires, thereby limiting wide-scale comparability. Few studies have addressed whether including specific questions, such as contraceptive method awareness questions, has an impact on responses about method use. This study aims to assess whether including contraceptive method awareness questions influences reported current method use differently across sociodemographic characteristics of respondents, based on secondary data analyses of PMA2020 surveys from five countries. In each country, analyses compared two surveys conducted six to 11 months apart: the first without the awareness questions and the second with them. Using a Chow test, the analysis explored whether differentials in reported modern method use by background characteristics varied between the two surveys. Findings suggested the inclusion of awareness questions did not result in differences in reported method use by most background characteristics, except by union status in three countries.

Introduction

Contraception is an important cost-effective primary prevention strategy for reducing untended pregnancies, which, in turn, improves women's health and reduces maternal and child mortality (Li, Becker, Tsui, & Ahmed, 2008; Darroch & Singh 2012; Ahmed, Li, Lui, & Tsui, 2012; Cleland, Conde-Agudelo, Peterson, Ross, & Tsui, 2012; Singh & Darroch, 2012). An estimated 222 million women in low-resource settings have an unmet need for modern contraceptives, placing them at risk of unintended pregnancies (Darroch & Singh, 2012). The high unmet need for family planning services underscores the pressing global health priority to ensure access to modern contraceptive services, a concern that has been recognized and has become a priority in recent years among the wider reproductive health community, including governments and donors (United Nations Development Group, 2003; Track 20, 2013; London Summit on Family Planning Summit Metrics Group [Family Planning Summit], 2012; United Nations, 2017). This is evident in global commitments made by Family Planning 2020 (FP2020) in 2012 and the United Nations in 2015. At the inaugural summit in London, FP2020 made a commitment to reach 120 million additional women in the world's poorest countries with modern methods (Family Planning Summit, 2012). The United Nations' Sustainable Development Goals (SDGs) also include meeting demand for family planning with modern methods (United Nations, 2017).

Accurate estimates of modern method use are essential for measuring progress toward the SDGs and FP2020 goals and for making programmatic decisions at both the global and country levels. The modern contraceptive prevalence rate (mCPR), the proportion of women of reproductive age, typically 15 to 49 years, using modern contraception methods, serves as a key metric for measuring contraceptive uptake and progress in family planning programs (United Nations Development Group, 2003). The measure is used by country governments, donors, and other stakeholders. Data for modern methods use typically come from various population-based sample surveys (FP2020, 2018; United Nations, 2018; Demographic and Health Surveys [DHS], 2018; United Nations Children's Fund [UNICEF], 2018; Performance Monitoring and Accountability [PMA2020], 2017). Because the surveys are based on interviews with women of reproductive age and rely on reports by women of their current method use, the quality of the data reported has been a major concern in using these surveys.

The validity of reports of contraceptive use gained attention when researchers found discrepancies between responses given by men and women. As a result, within-couple reporting inconsistency has been studied widely (Becker & Costenbader, 2001; Aiken, Wang, Higgins, & Trussell, 2016; Ahmed, Schellstede, & Williamson, 1987; Dare & Cleland, 1994; Irani, Speizer, & Fotso, 2014). Studies based only on women's response data indicate that validity varies by women's background characteristics (Gleil, 1999) as well as the methods of contraception used (Rossier, Senderowicz, & Soura, 2014; Staveteig, 2017; Khanna et al., 2017). The quality and accuracy of the responses also depend on the social context of the respondents. For example, under-reporting can be a problem in societies where family planning is a stigmatized or a sensitive issue (Guyavarch, 2006; Ahmed et al., 1987) while social desirability bias may result in over-reporting (Kelly, Soler-Hampejsek, Mensch, & Hewett, 2013; Mensch, Hewett, & Erulkar, 2003). Despite the importance of data quality, the validity of women's responses seldom has been investigated due to the lack of available independent data for comparison or verification (Guyavarch, 2006).

A key gap in this research is how different questionnaire approaches may affect women's reported method use. In addition to national surveys, a few major international surveys (United Nations, 2018) consist of data sources that are used to track global progress; unfortunately, these surveys do

not necessarily have comparable questionnaires, which is a crucial aspect of survey methodology. A key methodological concern is related to the utility and impact of the order of questions; specifically, whether questions on contraceptive methods awareness are asked and if they precede questions on current method use. Awareness questions ask if women have ever heard of a specific method of contraception, and typically include a probe with a description of the method. These questions serve two purposes: first, to collect data on awareness—a crude proxy for knowledge; and, secondly, to prime respondents for questions on current use of contraceptive methods. While questions on current use have been harmonized across most surveys, questions on contraceptive method awareness have been included inconsistently. For example, Demographic and Health Surveys (DHS) (2017) has included the awareness questions, but the Multiple Indicators Cluster Survey has not (UNICEF, 2014). Initially, Performance Monitoring and Accountability 2020 (PMA2020) surveys did not include the awareness questions, but they were added in subsequent rounds (PMA2020, 2017). Prior research also suggests that probing can lead to poorer data quality because respondents may guess at an answer when asked a knowledge-based question for which there is a verifiable right or wrong answer (Marken & Kluch, 2017). Probing also places an additional burden on the interviewer and may increase survey length (Marken & Kluch, 2017). The impact of probing self- reporting in subsequent questions has not been adequately studied.

The purpose of this study was to assess the impact of including contraceptive method awareness questions on reports of current method use among women, using observational data from PMA2020 surveys without and with the awareness questions. Specifically, we investigated whether including awareness questions differentially affected women's reports of method use across sociodemographic groups. The specific aims of the study were to: (1) assess differences in reported current use of contraception by background characteristics of women; and (2) compare the differential pattern in surveys without and with the awareness questions across countries.

Methods

PMA2020 Data

For the study, secondary analyses was conducted using population-based survey data from PMA2020. PMA2020 is a rapid-turnaround, monitoring survey used to track progress towards FP2020. Since 2013, surveys have been conducted in 11 countries where governments made an official commitment to achieve the FP2020 goal, thus raising their need for frequent annual monitoring and accountability. PMA2020 includes household and female surveys based on a representative cluster sample of the population as well as surveys of health facilities serving the sampled clusters. Comparable methodologies are used across countries and over time.

The population-based survey uses a multi-stage cluster sampling. In all countries, clusters are selected based on probability proportional to size, and a random sample of households is selected in each cluster. All women aged 15 to 49 years living in the sampled households are eligible for the female survey, which collects data on women's background characteristics, family planning, and reproductive health. Residential enumerators—locally recruited and trained women—conduct all interviews (Hawes, Safi, Greenleaf, & Tsui, 2017). The first four rounds of the surveys were conducted every six months in order to build the survey platform, including strengthening the capacity of enumerators; following the fourth round, the surveys are implemented annually.

The PMA2020 questions on contraceptive method use are comparable with those in major international surveys (DHS, 2017; UNICEF, 2014), and were included from the beginning. The

method awareness questions were introduced between 2014 and 2015, after initial surveys were undertaken with a more parsimonious questionnaire on family planning. This approach yielded two consecutive surveys within a relatively short time period using different questionnaires. The two questionnaires without and with awareness questions are presented in Figure 1. In the latter, enumerators asked all women if they heard of a contraceptive method from a list of all available modern and traditional methods used in the country. Enumerators were instructed to probe with a description of the method if respondents reported that they had not heard of the method.

Immediately following the probe, women who were not currently pregnant were asked a question about current contraceptive use. Women who reported using a method were then asked to specify which method(s) without any response categories provided. Of note, the surveys preceding the introduction of the method awareness questions asked women four questions prior to asking about current use: (1) if they had ever used a method of contraception, (2) number of children, (3) age at first use, and (4) method of first use. The survey immediately before introduction of the method awareness questions will heretofore be referred to as the survey round without the awareness question (WOAQ), and the data collected in the first survey round that included the awareness questions as the with awareness question (WAQ) round.

Figure 1. Examples of the no-probe and probe survey contraceptive method use questions

	Survey round without awareness question (WOAQ)	**Survey round with awareness question (WAQ)**
Method awareness question[a]		Have you ever heard of the contraceptive implant?[a] Probe: Women can have one or several small rods placed in their upper arm by a doctor or nurse, which can prevent pregnancy for one or more years. [IMAGE OF METHOD WILL APPEAR ON SCREEN] ○ Yes ○ No ○ No response
Contraceptive use question[b, c]	Have you ever used anything or tried in any way to avoid or delay getting pregnant? ○ Yes ○ No ○ No response	
Current contraceptive use question *(asked if responded yes above and not currently pregnant)*	Are you or your partner currently doing something or using any method to avoid or delay getting pregnant? ○ Yes ○ No ○ No response	Are you or your partner currently doing something or using any method to avoid or delay getting pregnant? ○ Yes ○ No ○ No response

Which current method[d] *(asked if responded yes above)*	Which method or methods are you using? Probe: Anything else? Select all methods mentioned. Be sure to SCROLL TO THE BOTTOM to see all choices.	Which method or methods are you using? Probe: Anything else? Select all methods mentioned. Be sure to SCROLL TO THE BOTTOM to see all choices.

Middle column table:

	Y	N
Female Sterilization	1	0
Male Sterilization	1	0
Implants	1	0
IUD	1	0

Right column table:

	Y	N
Female Sterilization	1	0
Male Sterilization	1	0
Implants	1	0
IUD	1	0

[a] The method awareness question is repeated for each contraceptive method available and used in each country. A total of 15 to 17 methods were included, depending on the country. They were: female sterilization, male sterilization, implants, IUD, injectables, pills, emergency contraception, male condoms, female condoms, diaphragm, foam/jelly, standard days method, lactational amenorrhea, rhythm method, and withdrawal. An example for implant was presented.
[b] The opening contraceptive use question asked in the WOAQ surveys varied slightly from the example presented by country. In the Ghana 2014, Nigeria 2014, and Burkina Faso 2014 surveys, the question did not specify having a partner in the question wording; instead, the question asked, "Are you currently doing something or using any method to avoid or delay a pregnancy?"
[c] This question was then followed by three questions asking the (1) number of children, (2) age at first use, and (3) method of first use prior to asking the current use question.
[d] The 'which current method' question listed 15 to 17 methods, depending on which methods were offered in a specific country. The list of methods was identical to the list for the awareness questions.

Study Countries

Data were drawn from PMA2020 countries where at least one WOAQ survey round and at least one subsequent WAQ survey round had been completed. Countries that launched PMA2020 surveys in the earlier years generally met the criterion. A total of five countries were eligible to be included in this study: Burkina Faso, Ethiopia, Ghana, Kenya, and Nigeria. Although Uganda and the Democratic Republic of Congo also launched PMA2020 surveys early, they included country-specific questions that might have affected comparability for our research purpose and were thus excluded from this analysis. In Nigeria, PMA2020 surveys have been introduced in eight states thus far; however, only surveys in two states, Lagos and Kaduna, were eligible for inclusion in this study. The two consecutive surveys, WOAQ and WAQ, from each country provided data for the findings reported here. The interval between the two surveys ranged from six months in Burkina Faso and Ghana to 11 months in Ethiopia and Nigeria. Table 1 describes demographic and economic characteristics of the five countries, showing a range of economic development and fertility trends.

Table 1. Demographic and economic characteristics of study countries and populations

	Burkina Faso	Ethiopia	Ghana	Kenya	Nigeria
Population size (million)[a]	**18.6**	**102.4**	**28.2**	**48.5**	**186.0**
Population below age 15[b] (%)	45.6	38.8	41.6	41.3	44.1
Total fertility rate[c]	5.7	4.6	4.2	4.1	5.7
Infant mortality rate[d]*	65	46	46	39	76
GNI per capita[a] (unit)	620	660	1,380	1,380	2,450

*Per 1,000 live births
[a] The World Bank. (n.d.). Countries and economies. *World Bank Open Data.* Retrieved from https://data.worldbank.org/country
[b] United Nations, Department of Economic and Social Affairs, Population Division. (2017). 2015 estimates of percentage of total population by broad age groups. In *World Population Prospects: The 2017 Revision, DVD Edition*. New York: United Nations.

[c] United Nations, Department of Economic and Social Affairs, Population Division. (2017). *2010 to 2015* estimates of total fertility rate. In *World Population Prospects: The 2017 Revision, DVD Edition*. New York: United Nations.
[d] United Nations, Department of Economic and Social Affairs, Population Division. (2017). Infant mortality rate for both sexes from 2010 to 2015. In *World Population Prospects: The 2017 Revision, DVD Edition*. New York: United Nations.
Abbreviation: GNI, gross national income.

Measures

The dependent variable is reported current modern contraceptive use. Women were categorized as using a modern method(s) if they reported using a modern method. For the purposes of this analysis, modern methods included female and male sterilization, implants, intrauterine devices (IUDs), injectables, pill, emergency contraception, male and female condoms, standard days method, and lactational amenorrhea method (Hubacher & Trussel, 2015). We further used any method use as an outcome, and results were qualitative comparable.

Independent variables included sociodemographic characteristics: age (categories by five-year increments), residential area (urban vs. rural), union status (in-union vs. not in-union), and household wealth quintiles. 'In-union' referred to women who were currently married or living with a man. For comparative analysis and interpretation, we chose consistent measures for women's education across countries. Despite the wide range of female education among study countries, two binary variables were created to easily categorize women who ever attended school (yes/no) and women who completed primary school (yes/no). Additionally, women's awareness of contraceptive methods was assessed in the analysis of data from the WAQ survey. Women were identified as being aware of a contraceptive method if they reported having heard of the method either with or without the awareness questions.

Analytic Plan

Analyses were restricted to non-pregnant women (85.6 to 94.7% of the sample in the study countries), since currently pregnant women were not asked the method use questions. The unit of analysis was individual women, and analyses were performed separately by country. Univariate analyses were conducted to describe the characteristics of the sample, awareness of contraceptive methods, current use, and type of methods. All estimates were adjusted for survey sampling design.

We first assessed differential method use by background characteristics of women in each survey by country. Bivariate analyses using simple logistic regressions and chi-square tests were employed to examine differences in modern method use by these characteristics. The multivariate logistics model included covariates that were significant in bivariate analyses. The same multivariate model was used across all surveys and included all covariates that were significant in at least three countries in order to maintain comparability in interpretation. These variables were: age, union status, ever attending school, wealth quintile, and urban residence. For the final multivariate model, a variance inflation factor was calculated to test multicollinearity and model fit was tested using the Hosmer-Lemeshow chi-square test. Following these tests, we did not delete any variables included in the initial model.

The second aim of the study addressed where differential contraceptive method use was comparable by background characteristics between WOAQ and WAQ surveys. As the WOAQ and WAQ surveys were generally conducted six to 11 months apart, we assumed that correlations between modern method use and background characteristics were relatively stable, even if the level of contraceptive use changed. We tested whether being asked about method awareness differentially affected reporting of current method use extent across background characteristics. A Chow test analysis was performed to explore whether the odds ratios of reported current modern method use differed for a given background characteristic between the WOAQ and WAQ rounds

within each country. The Chow test is ideal for data that resembles a stable process and is designed to determine whether a structural break in a time series exists that may be indicative of a trend meriting further study (Grogan, 2017). In other words, the Chow analysis tested whether a coefficient estimated in one group before a hypothesized structural break, in this case the inclusion of method awareness questions, is not equal to the coefficient in the second group, based on a null hypothesis of no difference. The statistical significance level was set at $P<0.05$. All data analysis was performed using Stata 13.0.

Results

Sample Characteristics
Most women who responded to the surveys were in-unions, although the percentage ranged from as high as 76.7% in Kaduna, Nigeria to as low as 54.5% in Ghana. A substantial difference was noted in the level of education of women across the five countries. In Kenya and Lagos, Nigeria, over 95% of women reported ever attending school, compared to about one-third of women in Burkina Faso.

Table 2. Study population characteristics: before and after introducing the awareness questions

Background Characteristics	Burkina Faso		Ethiopia		Ghana		Kenya		Kaduna, Nigeria		Lagos, Nigeria	
	WOAQ Dec. 2014 (%)[a]	WAQ Jun. 2015 (%)[a]	WOAQ May 2015 (%)[a]	WAQ Apr. 2016 (%)[a]	WOAQ Dec. 2014 (%)[a]	WAQ Jun. 2015 (%)[a]	WOAQ Dec. 2014 (%)[a]	WAQ Jul. 2015 (%)[a]	WOAQ Oct. 2014 (%)[a]	WAQ Sep. 2015 (%)[a]	WOAQ Oct. 2014 (%)[a]	WAQ Sep. 2015 (%)[a]
Sample size[b]	**1942**	**1924**	**7085**	**7062**	**4296**	**4873**	**4107**	**4176**	**2303**	**2564**	**722**	**1332**
Age group												
15–19	20.0	21.2	24.2	24.4	19.1	20.8	19.6	15.9	24.0	24.0	14.3	14.7
20–24	19.5	16.8	18.0	17.3	18.4	18.9	18.0	20.6	21.1	18.4	12.9	12.8
25–29	17.7	16.4	17.5	17.7	17.0	16.9	19.3	20.6	19.3	16.1	17.5	16.7
30–34	15.0	14.2	12.9	13.4	14.7	14.7	13.5	14.7	14.6	14.7	17.6	18.6
35–39	11.8	12.4	12.8	11.6	12.4	12.1	12.0	11.5	9.1	10.8	17.2	17.8
40–44	7.9	10.4	7.8	8.3	9.1	8.2	10.6	8.5	7.2	7.9	13.2	11.8
45–49	8.2	8.6	6.8	7.2	9.4	8.4	6.8	8.2	4.8	8.1	7.4	7.6
Current union status												
In union	79.3	74.3	62.1	61.7	55.1	54.5	59.6	62.1	77.8	76.7	61.6	64.1
Not in-union	16.9	22.1	28.1	28.2	34.6	35.9	3.1	29.3	18.6	19.44	32.88	31.0
Residence												
Urban	20.6	24.0	23.6	24.5	59.4	60.9	39.4	39.5	44.7	23.6	100.0	100.0
Rural	79.4	76.0	76.4	75.5	40.6	39.1	60.6	60.5	55.3	76.4	–	–
Education												
Ever attended	29.1	32.9	55.7	58.7	80.7	81.6	96.3	95.7	66.2	60.7	98.5	97.4
Completed primary	14.0	16.6	18.7	20.1	63.4	63.9	46.0	46.4	41.5	36.2	85.8	83.5
Wealth quintile												
Lowest	23.7	22.7	20.2	19.1	20.8	21.8	20.1	20.7	19.9	20.1	15.2	15.4
Lower	18.7	17.8	19.7	19.1	19.0	20.3	20.6	20.5	20.4	20.7	19.2	18.3
Middle	20.2	19.9	19.3	19.1	21.4	19.9	19.6	20.4	19.3	18.6	21.7	21.9
Higher	18.1	18.6	18.5	19.9	20.4	18.3	19.6	18.6	20.3	19.1	20.1	21.2
Highest	19.4	21.0	22.3	22.9	18.5	19.7	20.1	19.9	20.0	21.55	23.7	23.3

[a] Percent estimates are adjusted for sampling weight
[b] Sample size based on weighted estimate sample
Note: Dates listed are for date of data collection completion in each country/round
Abbreviations: WOAQ, without awareness questions; WAQ, with awareness questions.

Contraceptive Use and Method Awareness
Contraceptive use varied significantly across countries, with mCPR ranging from 9.5% in Kaduna, Nigeria in 2014 to 48.9% in Kenya in 2015 (Table 3). Over the short time between the two surveys, mCPR increased considerably even though the confidence intervals overlapped—except in Kenya, where the difference between mCPR estimates was statistically significant: 42.3% (95% CI: 39.6 to 45.0) in 2014 and 48.9% (95% CI: 45.4 to 52.3) in 2015.

Figure 2. Cross-Country Comparison of MCPR Trends Between the WOAQ and WAQ Surveys
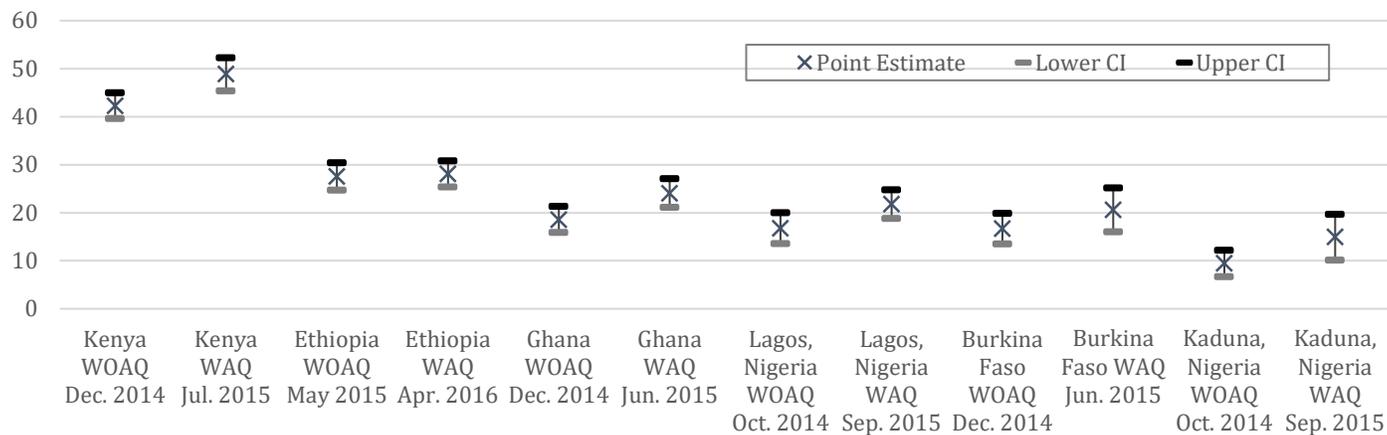
Notes: Dates listed are for date of data collection completion in each country/round; all estimates are weighted for complex survey design; and countries are listed in a descending order of mCPR
Abbreviations: CI, confidence interval; mCPR, modern contraceptive prevalence rate; WOAQ, without awareness questions; WAQ, with awareness questions.

Awareness of contraceptive methods, assessed in the latter surveys, also varied significantly by country and method type. In Kenya, seven modern methods were commonly known—known by at least two-thirds of women—compared to only two in Kaduna, Nigeria (Table 4). Across all countries, injectables and pills were commonly known. Male condom awareness was high in all geographies, except in Kaduna, Nigeria, where it was only at 60%. Awareness of implants was also high—except in the two states in Nigeria—ranging from 78% in Ghana to 87% in Kenya.

Table 3. Contraceptive use: before and after introducing the awareness questions

	Kenya		Ethiopia		Ghana	
	WOAQ Dec. 2014	WAQ Jul. 2015	WOAQ May 2015	WAQ Apr. 2016	WOAQ Dec. 2014	WAQ Jun. 2015
Sample size (N)[a]	4107	4176	7085	7062	4296	4873
CPR (95% CI)	43.2 (40.5–45.9)	50.9 (47.4–54.4)	28.3 (25.5–31.2)	29.6 (26.9–32.2)	22.7 (19.5–25.8)	29.3 (25.9–32.8)
mCPR[b] (95% CI)	42.3 (39.6–45.0)	48.9 (45.4–52.3)	27.6 (24.7–30.4)	28.1 (25.4–30.8)	18.6 (15.9–21.3)	24.1 (21.1–27.1)

	Lagos, Nigeria		Burkina Faso		Kaduna, Nigeria	
	WOAQ Oct. 2014	WAQ Sep. 2015	WOAQ Dec. 2014	WAQ Jun. 2015	WOAQ Oct. 2014	WAQ Sep. 2015
Sample size (N)[a]	722	1332	1942	1924	2303	2564
CPR (95% CI)	19.2 (15.7–22.6)	29.5 (25.6–33.5)	16.8 (13.6–19.9)	21.6 (16.9–26.3)	9.8 (7.2–12.5)	16.5 (11.8–21.2)
mCPR[b] (95% CI)	16.8 (13.6–20.0)	21.8 (18.8–24.8)	16.7 (13.5–19.9)	20.6 (16.0–25.2)	9.5 (6.7–12.2)	15.0 (10.1–19.7)

[a] Sample size based on weighted estimate sample
[b] Estimate based on women's reported use of a current modern contraceptive method, which include female sterilization, male sterilization, implants, IUD, Injectable, pill, emergency contraception, male condom, female condom, diaphragm, standard days method and lactational amenorrhea method (LAM)
Dates listed are for median date of data collection completion in each country/round
Note: Countries are listed in a descending order of modern contraceptive prevalence rates.
Abbreviations: CI, confidence interval; CPR, contraceptive prevalence rate; mCPR, modern contraceptive prevalence rate; WOAQ, without awareness questions; WAQ, with awareness questions.

Table 4. Methods awareness by country: percent of women who ever heard of each method[a]

	Kenya Jul. 2015 (%)	Ethiopia Apr. 2016 (%)	Ghana Jun. 2015 (%)	Lagos, Nigeria Sep. 2015 (%)	Burkina Faso Jun. 2015 (%)	Kaduna, Nigeria Sep. 2015 (%)
Sample size (N)[b]	4176	7062	4873	1332	1924	2564
Modern methods						
Female sterilization	76.5	29.1	67.6	40.4	31.1	32.9
Male sterilization	48.0	12.3	40.2	23.1	21.5	15.9
Implants	86.6	81.7	77.9	48.5	83.9	45.4
IUD	72.9	47.7	49.0	56.2	35.7	26.8
Injectables	95.5	93.2	89.4	79.2	87.4	70.2
Pill	94.6	88.6	86.7	77.5	87.7	67.4
Emergency contraception	58.3	22.4	51.3	50.2	23.1	17.7
Male condoms	96.9	71.4	94.1	96.4	86.7	59.8
Female condoms	72.7	25.1	82.1	72.8	56.5	33.1
Diaphragm	25.9	–	21.0	19.8	15.5	12.8
LAM	35.3	26.9	31.8	39.8	26.2	29
Traditional methods						
Foam/jelly	20.0	–	23.5	15.3	12.8	10.1
Beads	30.3	8.0	28.7	19.3	38.7	21.9
Rhythm method	64.6	38.8	65.2	53.3	29.6	27.3
Withdrawal	59.3	22.5	66.4	69.1	18.1	35.6
Other	11.8	2.8	24.4	14.0	8.2	23.7

[a] Survey round with awareness question only
[b] Sample size based on weighted estimate sample
– Not available
Note: Dates listed are for date of data collection completion in each country/round; all estimates are weighted for complex survey design; and countries are listed in a descending order of MCPR
Abbreviations: IUD, intrauterine device; LAM, lactational amenorrhea method.

Differential Use of Modern Method by Background Characteristics
In the multivariable model (see Table 5), being in-union was consistently associated with increased odds of reported modern contraceptive method use across countries. The associations between modern method use and other characteristics varied considerably by country. Age was positively associated with increased odds of reported current modern method use in both survey rounds in Kenya, Burkina Faso, and Kaduna, Nigeria, but not in Ghana or Ethiopia. Ever attending school was positively and significantly associated with reported modern method use in all countries, except Ethiopia, for at least one of the surveys. Living in rural settings was negatively associated with method use in only one survey, the Burkina Faso 2015 (WAQ). In contrast, women living in rural areas had increased odds of reported modern method use in Ghana 2014. Residential area was not significantly associated with reported modern method use in any of the other surveys.

Table 5: Multivariate analysis of using modern methods by country: before and after introducing the awareness questions

Background Characteristics	Kenya			Ethiopia			Ghana		
	WOAQ Dec. 2014 aOR (95% CI)	WAQ Jul. 2015 aOR (95% CI)	Chow F-Statistic	WOAQ May 2015 aOR (95% CI)	WAQ Apr. 2016 aOR (95% CI)	Chow F-Statistic	WOAQ Dec. 2014 aOR (95% CI)	WAQ Jul. 2015 aOR (95% CI)	Chow F-Statistic
Age (15 to 19 years)	0.99 (0.94–1.05)	1.00 (0.95–1.06)	NA	**0.92*** (0.86–0.98)	**0.93*** (0.88–0.99)	1.06	0.97 (0.91–1.04)	0.98 (0.93–1.04)	NA
Ever attended school	**2.82**** (1.58–5.05)	**3.67***** (2.44–5.51)	2.08	1.32 (1.00–1.73)	1.18 (0.94–1.48)	NA	1.34 (0.91–1.98)	**1.52*** (1.08–2.14)	NA
Wealth quintile (lowest)	0.99 (0.91–1.10)	1.05 (0.96–1.14)	NA	**1.19*** (1.03–1.36)	**1.24***** (1.10–1.40)	0.58	1.09 (0.96–1.23)	1.01 (0.88–1.15)	NA
In-union	**8.53***** (6.68–10.91)	**5.78***** (4.44–7.53)	5.66*	**13.02***** (9.58–17.70)	**12.79***** (9.63–16.99)	0.10	**2.15***** (1.55–2.97)	**2.68***** (2.16–3.31)	1.08
Rural	0.74 (0.54–1.02)	0.87 (0.64–1.18)	NA	0.74 (0.49–1.11)	0.91 (0.63–1.31)	NA	**1.84**** (1.28–2.63)	1.17 (0.73–1.88)	NA

Background Characteristics	Lagos, Nigeria			Burkina Faso			Kaduna, Nigeria		
	WOAQ May 2015 aOR (95% CI)	WAQ Sep. 2015 aOR (95% CI)	Chow F-Statistic	WOAQ Oct. 2014 aOR (95% CI)	WAQ Jun. 2015 aOR (95% CI)	Chow F-Statistic	WOAQ Oct. 2014 aOR (95% CI)	WAQ Jun. 2015 aOR (95% CI)	Chow F-Statistic
Age (15 to 19 years)	1.07 (0.96–1.19)	1.03 (0.95–1.12)	NA	1.05 (0.97–1.14)	1.01 (0.95–1.08)	NA	**1.25***** (1.14–1.37)	**1.35***** (1.25–1.46)	0.08
Ever attended school	–	1.78 (0.64–4.93)	NA	**1.76**** (1.21–2.55)	**1.43*** (1.01–2.02)	0.16	**2.71***** (1.22–5.99)	**1.48*** (1.22–8.45)	0.15
Wealth quintile (lowest)	1.06 (0.92–1.22)	**1.22**** (1.06–1.40)	NA	**1.16*** (1.00–1.35)	**1.25*** (1.054–1.49)	2.58	**1.23*** (0.98–1.53)	**1.70***** (1.30–2.22)	2.51
In-union	**2.09*** (1.20–3.64)	**3.58***** (2.15–5.97)	3.19	**5.11***** (3.06–8.54)	**3.33***** (2.33–4.77)	6.34*	**9.89***** (4.39–22.28)	**4.24***** (2.83–6.34)	5.86*
Rural	–	–	NA	0.69 (0.45–1.06)	**0.51**** (0.32–0.81)	NA	0.95 (0.46–1.95)	2.04 (0.00–0.002)	NA

*P<0.05, ** P<0.01, ***P<0.001

– Not available. All clusters were urban, since Lagos is urban state.

NA = not applicable. Chow test only runs on variables that were significant in the multivariate logistic regression.

Notes: Dates listed are for median date of data collection completion in each country/round; all estimates are weighted for complex survey design; and countries are listed in a descending order of mCPR

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval; WOAQ, without awareness questions; WAQ, with awareness questions.

Comparison of Differences in Modern Method Use Between the WOAQ and WAQ Surveys
The multivariate Chow test analysis indicated a statistically significant difference between the estimated odds ratios by union status in the two surveys' without and with awareness questions in Burkina Faso, Kenya and Kaduna, Nigeria. While women in-union had higher odds of using modern methods in both surveys, the odds ratios decreased in the later survey, which included awareness questions. No other socioeconomic differentials in reported modern method use between the two surveys were significant (Table 5).

Discussion

Using large-scale, representative population-based survey data from five countries in sub-Saharan Africa, we investigated whether inclusion of awareness questions about contraceptive methods affects responses on current method use. The findings suggest that the inclusion of these questions did not result in differential reporting of modern method use by most socioeconomic characteristics between the two surveys.

One exception to the overall null findings was in regard to union status in Kenya, Burkina Faso, and Lagos, Nigeria. While women in-union were more likely to use modern methods than their counterparts in both surveys, differences by union status were statistically significantly reduced in the later survey with the awareness questions. This finding suggests that introduction of the awareness questions may have disproportionately influenced responses about modern method use among women who were not currently in a union. In other words, some women who were not currently in a union may not have reported modern method use previously but reported using modern methods when asked the awareness questions. The change in the questionnaire may have resulted in a problem comparing the data on method use between the two surveys.

Investigating the impact of questionnaire differences on data comparability ideally requires a randomized controlled trial design. Nevertheless, the closely conducted surveys that were used to establish and strengthen the survey platform in the early stage of PMA2020 provided a unique opportunity for an observational study. The use of data from varying countries with different family planning programs and demographic and economic background characteristics was a strength of the study. An important hypothesis of our analysis was that the awareness questions would prime women with certain background characteristics more than others. For example, women with socioeconomically advantageous characteristics may not need to be reminded of various contraceptive methods available in the country and would likely give consistent responses regardless of being asked about awareness of methods. However, if the awareness questions affected the responses of all women, regardless of their background characteristics, we would have not been able detect an impact in this study. It is also possible that changes in policies, family planning programming, and/or service delivery were implemented during the period between data collection for the two surveys. Modern method use among women currently not in-union may have increased as a result of programmatic efforts and not because of questionnaire changes. The consistency of this relation across three countries suggests that changes in programmatic efforts are not a likely explanation for the finding.

The study highlights the challenges of assessing the validity of reporting of contraceptive use based only observational data. A major challenge was that our study did not measure potential unobserved confounders, such as changes in family planning programming, other changes to the PMA2020 data collection process, or other changes that happened between the two survey rounds

that may have influenced women's response. Although the content of survey questionnaires is important, it is not the sole determining factor for data quality. It is possible that other crucial factors related to survey data quality—such as the amount and quality of enumerator training, interview protocol, and data recording methods—may have also changed coinciding with the questionnaire revision.

The validity of responses can be also assessed against a gold standard at the individual level, although only feasible at a smaller scale, or based on another source of data at the population level. Prior research has primarily involved cross-checking self-reports against individual medical records by clinical diagnosis or by biomedical testing (Dare & Cleland, 1994). Opportunities to apply these modes of validation to self-reported sexual behavior, including the use of contraceptive methods, are limited due to the nature of these sensitive behaviors. Moreover, individual-level medical records are often incomplete, unavailable, or of low quality in low-resource settings. Another approach is an external validity check that is often used in population-level family planning survey research, which employs comparing survey results with service statistics or contraceptive sales data (Dare & Cleland, 1994).

Future studies may explore other survey strategies in measuring current contraceptive use, which included, but not limited to, the inclusion of method awareness questions. To specifically reduce potential unobserved confounders, experimental study designs such as randomized controlled trials or quasi-experimental studies using propensity scores may be considered. Also, further secondary data analyses can address awareness questions and their impact on reported use of specific methods, as opposed to just overall modern method. For example, long-acting reversible contraceptives and sterilization may be viewed differently from methods that require a regular action to use and, therefore, be less likely reported as a current method, as prior research has indicated (Rossier et al., 2014; Staveteig, 2017; Khanna et al., 2017).

Conclusions

This analysis explored whether the inclusion of method awareness questions affected the reported use of modern contraceptives differently among women with varying socioeconomic characteristics in five diverse low-resource settings. The findings suggest that the inclusion of the method awareness questions did not result in differential reporting of modern method use by most socioeconomic characteristics between the two surveys, with one exception. The questions appear to have differentially affected reports of use between women who are and are not currently in-union in three of the five countries we studied, lending credence to this finding; women not in a union appeared to be more likely to report use when these questions were included as a probe in the survey. The study contributes to evidence-based survey methodologies to measure contraceptive use, data crucial for monitoring and evaluating family planning programs and global initiatives.

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