



Radovich, E; Dennis, ML; Wong, KLM; Ali, M; Lynch, CA; Cleland, J; Owolabi, O; Lyons-Amos, M; Benova, L (2017) Who Meets the Contraceptive Needs of Young Women in Sub-Saharan Africa? The Journal of adolescent health. ISSN 1054-139X DOI: <https://doi.org/10.1016/j.jadohealth.2017.0>

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Original article

Who Meets the Contraceptive Needs of Young Women in Sub-Saharan Africa?

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Article history: Received April 10, 2017; Accepted September 26, 2017

Keywords: Contraception; Family planning; Africa; Demographic and Health Surveys (DHS)

A B S T R A C T

Purpose: Despite efforts to expand contraceptive access for young people, few studies have considered where young women (age 15–24) in low- and middle-income countries obtain modern contraceptives and how the capacity and content of care of sources used compares with older users.

Methods: We examined the first source of respondents' current modern contraceptive method using the most recent Demographic and Health Survey since 2000 for 33 sub-Saharan African countries. We classified providers according to sector (public/private) and capacity to provide a range of short- and long-term methods (limited/comprehensive). We also compared the content of care obtained from different providers.

Results: Although the public and private sectors were both important sources of family planning (FP), young women (15–24) used more short-term methods obtained from limited-capacity, private providers, compared with older women. The use of long-term methods among young women was low, but among those users, more than 85% reported a public sector source. Older women (25+) were significantly more likely to utilize a comprehensive provider in either sector compared with younger women. Although FP users of all ages reported poor content of care across all providers, young women had even lower content of care.

Conclusions: The results suggest that method and provider choice are strongly linked, and recent efforts to increase access to long-term methods among young women may be restricted by where they seek care. Interventions to increase adolescents' access to a range of FP methods and quality counseling should target providers frequently used by young people, including limited-capacity providers in the private sector.

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IMPLICATIONS AND CONTRIBUTION

Using nationally representative data from 33 sub-Saharan African countries, this study comprehensively describes where young women obtain modern contraception and how their use of providers and care received compared with older women. Results suggest that efforts to improve quality and method choice should target limited-capacity private providers frequently used by youth.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

Disclaimer: Selected findings from this study have previously been presented as an oral presentation at the International Health Policy Conference in London, United Kingdom (February 2017) and the IUSSP International Population Conference in Cape Town, South Africa (November 2017), and as a poster presentation at the Global Women's (GLOW) Research Society Conference in Manchester, United Kingdom (November 2016), and the Population Association of America annual meeting in Chicago, USA (April 2017).

This report contains the collective views of the authors and does not necessarily represent the decisions or the stated policy of the World Health Organization.

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It is critical to address unwanted pregnancy among young women in sub-Saharan Africa, a region with one of the highest adolescent pregnancy rates and the lowest rates of family planning (FP) use [1]. Amidst increasing calls to prioritize adolescents' contraceptive needs, understanding current patterns of adolescent FP service use is vital to achieving universal access to sexual and reproductive health services [2–4].

High-quality FP care is crucial to preventing unwanted pregnancy, particularly among young people. In a study of 40 countries with Demographic and Health Surveys (DHS), adolescent contraceptive practice was characterized by inconsistent use, with more method failure and discontinuation compared with older women; the authors suggest young women face more obstacles to use or abandon a method if experiencing side effects [5]. Health concerns and side effects are frequently cited as reasons for not using a method [4,6], and youth often have misconceptions about how contraception works [3,7]. Appropriate counseling, particularly when initiating contraceptive use or switching methods, is important to addressing knowledge gaps around pregnancy prevention and consistent contraceptive use [8,9] and is one of the six elements in the Bruce framework for quality FP care [10].

However, young people encounter significant barriers to accessing quality health care [11–13], including provider bias, age restrictions or stigmatization when seeking FP services, and concerns about confidentiality [7,14–16]. World Health Organization 2012 guidelines emphasized the improvement of young people's health services [11], and efforts to make services “youth friendly” have appeared in several small-scale initiatives, primarily led by nongovernmental organizations (NGOs) and, to some extent, government-run health facilities [11,17]. Some evidence suggests that these efforts have increased health service utilization, including FP use [3,17,18].

Yet the evidence base for where adolescents seek FP care in low- and middle-income countries is limited. Much of the evidence on young people's FP use and provider preferences in sub-Saharan Africa comes from small-scale, often qualitative, studies not nationally representative [14,15,19], focused on a limited number of countries [16,20,21] or studies that do not consider quality of FP counseling across provider types [22]. The private sector is an important source of FP care in the region for women of all ages [23], suggesting that public-sector efforts expanding youth-friendly services may miss a significant proportion of young people accessing private providers. Young people frequently utilize different FP methods compared with older users. As method and source can be linked, there is a need to consider how youth FP care seeking compares with older women.

Within global efforts to improve FP access and quality of care, particularly for youth, it is essential to understand where young people obtain contraception to inform points of intervention and cross-country learning. This paper aims to compare how FP sources and the content of FP care received differs between adolescent (aged 15–19), young (aged 20–24), and older women (aged 25+) using nationally representative surveys from multiple sub-Saharan African countries.

Methods

DHS are nationally representative, cross-sectional household surveys of women of reproductive age (15–49 years) with multistage cluster sampling designs. We utilized the most recent DHS as of June 2016 for every country in sub-Saharan Africa with

a survey since 2000 and data available for the first source of respondents' current contraceptive method. We examined first source of the user's current method as DHS content of care questions refer to the provider where respondents initiated use of the method.

Results are presented for each country, adjusted for survey design and survey-specific weighting. We calculated regional statistics for sub-Saharan Africa by weighting country-specific estimates by the country's population based on United Nations population estimates for the median survey year 2012 [24]. We present 95% confidence intervals; adjusted Wald tests were performed to compare proportions. Analyses were conducted using Stata/SE v14 (StataCorp, College Station, TX).

Definitions and population

We examined two populations of women exposed to pregnancy risk [25]: (1) those currently using a modern FP method and (2) a subsample of modern method users starting use in the 5 years before the survey. We included intrauterine device (IUD), implant, injection, pill, and male condom as modern methods, according to Hubacher and Trussell's definition [26]. We excluded lactational amenorrhea and standard days method—methods sometimes considered modern in other studies—as unlike other contraceptive commodities and medical procedures, they do not always require a source or provider. We excluded the 1.2% of respondents reporting their method as “other modern” in DHS response options as these respondents were not asked about the method's source. We further excluded female/male sterilization, female condom, emergency contraception, diaphragm/foam/jelly, and contraceptive patch users as these methods combined account for less than 6% of modern method users, including less than 1% of users aged 15–19 or 20–24. We considered IUD and implant to be long-term methods. Because of the small sample size of IUD users among those aged 15–19 and 20–24 years, IUD and implant users were combined. Modern method mix estimates included the first population of respondents, who started their current method at any point before the survey.

Women were grouped by their age at the time of the survey: 15–19, 20–24, and 25+ years. We used DHS classifications for current marital/cohabitation status, grouping currently married and formerly married respondents as “ever married.”

Categorization of source and sector of provision

DHS respondents were asked for the first source of their current method only if starting continuous use of the method within 5 years of the survey. Continuous use of the method was based on the month and the year since the respondent reported using the method “without stopping” [27]. The median length of use was less than 1 year for modern method users aged 15–24 and 1.5 years for users aged 25+; 99%, 97%, and 87% of users aged 15–19, 20–24, and 25+, respectively, started current use less than 5 years before the interview.

Across all 33 countries, we classified response options for the first source of the user's current method according to the sector and the theoretical capacity to provide both short- and long-term methods, calling FP providers “comprehensive” or “limited.” Respondents with missing or unclassifiable sector/capacity of first source (i.e., “other”) accounted for <3% of modern method users and were excluded. We created six classifications of FP providers: (1) public—comprehensive, (2) public—limited, (3)

Table 1
Definition and examples for the six classifications of FP provider by sector and capacity

Classification	Definition and examples ^a
Public (comprehensive)	All government/public service locations capable of providing both short- and long-acting methods Examples: public hospital, community health center, family doctor, nurse
Public (limited)	All government/public service locations not generally capable of providing long-acting methods Examples: community health worker, public pharmacy/dispensary, government distributor
Private (comprehensive)	Private sector locations, including faith-based or NGO-affiliated locations, which are capable of providing both short- and long-acting methods Examples: private hospital/clinic, private doctor, mission health post, NGO mobile clinic
Commercial drug seller (limited)	Commercial drug shops and pharmacies not generally capable of providing long-acting methods Examples: private pharmacy, private drug store, private dispensary
Other private (limited)	Private sector providers not generally capable of providing long-acting methods Examples: private fieldworker, NGO voluntary community health worker, mission door-to-door
Informal (limited)	Commercial retailers, partners, friends, and other locations not considered medical providers or generally capable of providing long-acting methods Examples: relatives/friends, street vendor, shop/market, bar, school

FP = family planning; NGO = nongovernmental organization.

^a There were 109 unique family planning provider response options in the 33 surveys, so only examples are shown.

private—comprehensive, (4) commercial drug seller—limited, (5) other private—limited, and (6) informal—limited (see [Table 1](#) for definitions and examples). Classifications were based on provider groupings used in Campbell et al. [23], a review of the literature, and expert consultations to account for country-level variability in providers' capacity. We considered public sector to be government-provided services and the private sector to include the classifications "private—comprehensive," "commercial drug seller," and "other private—limited." Few countries distinguish faith-based/NGO providers in DHS response options, and the use of these providers may be misclassified as other types of public or private providers [28]. For countries where they appear as response options, we grouped comprehensive faith-based/NGO providers under "private—comprehensive" while noting this combines providers with potentially different profit motives. Two source categories, "public—limited" and "other private—limited," each accounted for <1% of modern method users and were excluded from age group comparisons of first source and content of care.

We used a multilevel multinomial modeling approach to model the log odds of first provider use by age group among condom, injection, and pill users—methods theoretically accessible at both comprehensive and limited-capacity providers—while accounting for different service environments through controlling for the user's urban or rural residence and country-level random effects. We report the results as model-based predicted probabilities, along with their 95% confidence interval.

Content of care

To assess the content of care received across providers, we examined two binary components separately—whether the user was (1) informed of side effects or not and (2) told of other contraceptive methods or not—and together as a combined variable. These two components are included in FP2020's Method Information Index for measuring quality of care through information received during FP consultations [9,29]. The constructed binary variable for "good" content of care was based on the respondent answering yes to both components. Respondents answering no to either component but with a missing value for the second component (<.1%) were classified as having poor content of care. Respondents answering yes to one component but with a missing value for the second component (<.1%) or with missing values

for both components (1%) were excluded from the content of care analysis. Most countries limited content of care questions to IUD/implant, injection, and pill users starting use in the 5 years before the interview, so content of care analysis was limited to those users for all surveys. Multilevel logistic regression with country-level random effects estimated the effect of age on receiving good content of care, adjusting for provider, method, and user characteristics.

Ethical approval

DHS received government authorization, and used informed consent and confidentiality assurances. The London School of Hygiene and Tropical Medicine's Research Ethics Committee approved our analyses.

Results

Surveys from 33 countries included in our study were collected in 2009–2015. [Table S1](#) provides a list of countries, survey years, sample sizes, and modern method users included in the analysis.

Method mix

As contraceptive type can determine possible sources of provision, we estimated the modern method mix among current users aged 15–24 in each country ([Figure S1](#)). The majority of users reported using a short-term method, particularly condoms and injections, which accounted for more than 80% of modern methods used by this age group.

[Figure 1](#) illustrates regional estimates for modern method mix and proportion ever married by single years of age among current FP users aged 15–24. Condoms were the predominant method for the youngest users. Method mix changed rapidly between ages 15 and 24, with declining condom use and increasing pill and injection use with each year increase in age. The increasing proportion of users utilizing injections was particularly dramatic between ages 15 and 20, where it closely followed an increasing proportion of users ever married.

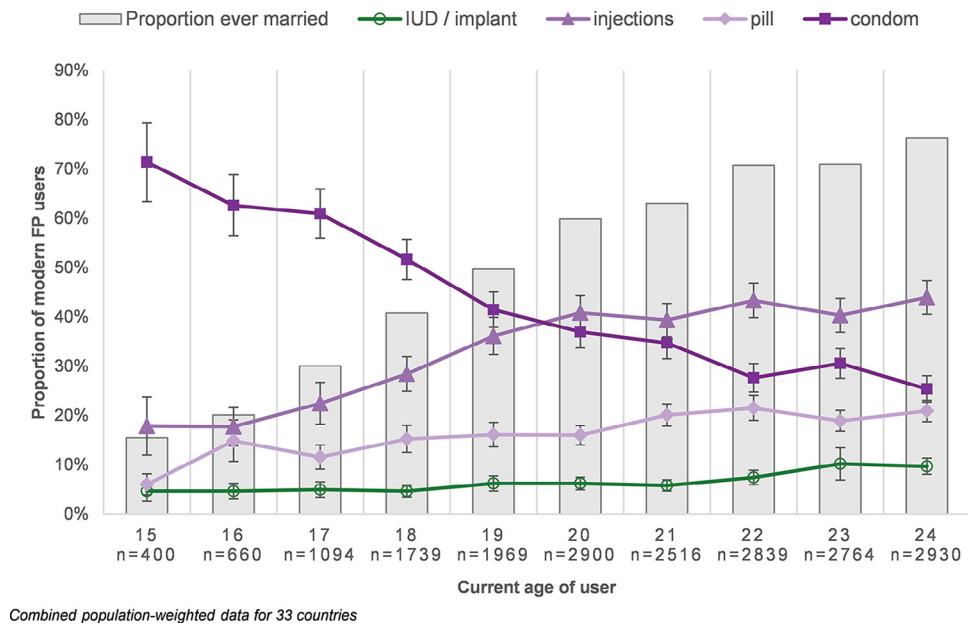


Figure 1. Change in method mix by single years of age, 15–24, among modern FP users.

Provider type by method

Regional estimates for sector and capacity of first provider of the respondent's current method among users aged 15–19 and 20–24 are shown in Table 2. The public sector, both comprehensive and limited providers, was the first source of the current method for 39.0% of users aged 15–19 and for 55.4% of users aged 20–24. Method type was strongly patterned by the first source. Approximately 80% of condom users reported a commercial drug seller or an informal provider (which included the respondent's partner) as their first source for both age groups. IUD/implant was a small proportion of the methods used by women aged 15–19 or 20–24, but was overwhelmingly provided by comprehensive public providers.

When compared by FP users' marital status (Table S2), more than 65% of ever-married women aged 15–19 and 20–24 reported a comprehensive public provider, whereas more than 65% of never-married women aged 15–19 and 20–24 reported commercial drug sellers or informal providers as the first source of their method. This was driven by the large proportion of condom users among never-married modern method users. Within both age groups, larger proportions of ever-married women used a comprehensive public provider compared with never-married women across all methods.

Comparing providers by age

There was a clear age gradient in the use of some FP providers (Figure 2A). Comprehensive public providers were the most used first source among all age groups; this was particularly seen among older women (age 25+) where nearly 70% of modern FP users first obtained their method from this provider. The use of comprehensive providers (from either sector) increased significantly with age ($p < .001$). Among adolescents aged 15–19, 49.4% received their method from a comprehensive provider in either the public or private sector compared with 65.2% among women

aged 20–24 and 81.4% among those age 25+. Half of modern method users aged 15–19 reported obtaining their method from commercial drug sellers or informal providers. Among 15- to 19-year-olds using informal providers, the vast majority were using condoms obtained from a relative/friend/partner or commercial retailers ("shop/market").

Table S3 shows providers by age group for each country. In 24 of the 33 countries, comprehensive public provider use increased with increasing age, in line with regional-level estimates. Among the nine countries without a clear trend of increasing public-sector use by age group, three countries (Burundi, Rwanda, and Zambia) had comprehensive public provider use above 80%–90% across all three age groups. The regional trend of decreasing use of informal providers with increasing age was observed in all but four countries—Ethiopia, Liberia, Mali, and Sierra Leone—where the use of this provider category was low (<1%–8%) across all three age groups, and condoms accounted for less than 10% of the modern method use among users aged 15–24. Ten countries showed declining use of commercial drug sellers with increasing age, as seen in the regional-level estimates, but in 10 countries, the use of commercial drug sellers peaked at ages 20–24. In 12 countries, the use of comprehensive private or commercial drug sellers was less than 5% across all three age groups.

Figure 2B shows the first providers by the respondent's age among condom users. Women aged 25+ were more likely to obtain their condom from a comprehensive public provider compared with the two younger age groups ($p < .001$), whereas half of condom users aged 15–19 reported an informal source. Commercial drug sellers were the leading source for condom users aged 20–24 and 25+. A multilevel model, adjusted for residence and country-level random effects, showed a similar pattern of provider usage. The predicted probability of condom users aged 15–19 accessing comprehensive public providers was 10.8%, compared with 16.4% and 26.2% of condom users aged 20–24 and 25+, respectively (Table S4). Among injection users, the overwhelming

Table 2
First source of current FP by modern method among users aged 15–19 and 20–24 by sector and capacity of the provider

Sector/capacity of first source	First source among current method users starting in the last 5 years, ages 15–19 and 20–24											
	IUD/implant		Injections		Pill		Condom		Total			
	15–19	20–24	15–19	20–24	15–19	20–24	15–19	20–24	15–19	20–24		
Public (comprehensive)	85.2 (78.9–89.8)	87.0 (82.2–90.6)	75.2 (70.4–79.3)	78.7 (76.4–80.7)	55.0 (49.3–60.5)	54.2 (51.2–57.2)	8.5 (7.1–10.1)	11.8 (10.3–13.4)	37.9 (35.5–40.4)	54.7 (52.9–56.6)		
Public (limited)	12.3 (2–11.0)	11.0 (1–8)	19.1 (4–12)	16.1 (3–6)	9.3 (3–13)	8.2 (7–1.7)	1.5 (1.0–2.4)	1.0 (.7–1.4)	1.1 (.8–1.6)	.7 (.6–.9)		
Private (comprehensive)	7.7 (7.9–18.4)	6.6 (7.6–15.7)	3.1 (15.4–23.4)	2.9 (14.2–18.2)	25.1 (6.2–13.9)	26.4 (6.7–10.0)	33.3 (2.6–5.5)	3.3 (2.2–4.8)	21.9 (7.9–11.0)	10.3 (9.3–11.5)		
Commercial drug seller (limited)	.6 (.2–2.6)	.3 (.2–1.6)	4.4 (2.0–4.6)	3.3 (2.2–3.9)	.01 (20.7–30.1)	.2 (23.5–29.5)	4.4 (30.3–36.5)	4.4 (41.1–46.8)	3.3 (20.0–24.0)	19.5 (18.1–21.0)		
Other private (limited)	.1 (.2–1.9)	.3 (.1–.8)	1.3 (2–.8)	.9 (1–.6)	7.5 (.0–.04)	7.6 (.1–.4)	48.2 (.2–.8)	35.6 (.1–1.1)	26.6 (.2–.5)	12.4 (.2–.5)		
Informal (limited)	.7 (.02–.8)	.6 (.1–.7)	3.3 (.5–3.0)	.7 (.6–1.5)	2.5 (5.6–9.9)	2.3 (6.2–9.2)	4.3 (45.0–51.4)	4.1 (33.1–38.2)	2.8 (24.6–28.8)	2.0 (11.5–13.4)		
First source missing/unclassifiable	100	100	100	100	100	100	100	100	100	100		
Total (%)	305	1,095	1,640	5,752	831	2,692	3,040.87	4,002	5,816	13,541		

CI = confidence interval; FP = family planning; IUD = intrauterine device.

majority across all age groups used comprehensive public providers (Figure 2C). A slight age gradient favored the youngest injection users in utilizing comprehensive private providers, with some evidence that injection users aged 15–19 were more likely to use these providers compared with those aged 25+ ($p = .025$) (Figure 2C), although differences in the multilevel model were not significant (Table S4). More than 55% of pill users (Figure 2D) reported a comprehensive public provider as first source across all three age groups, but commercial drug sellers were the first source for a quarter of all pill users.

Comparing content of care by age

Figure 3 shows the proportion of users by age group reporting good content of care by the first source of their current method. Less than 55% of IUD/implant, injection, or pill users reported good content of care across all provider categories and age groups. There was a clear age gradient in better content of care among comprehensive private providers where 29.7% of 15- to 19-year-olds and 40.3% of 20- to 24-year-olds compared with 49.9% of those aged 25+ received both care components ($p < .001$). Additionally, a slightly higher proportion of women aged 25+ received good content of care from comprehensive public providers compared with women aged 15–19 or 20–24. Users obtaining their method from commercial drug sellers or informal providers reported the lowest levels of good content of care. Among informal providers, women aged 15–19 were significantly less likely to report good content of care ($p < .001$) compared with women aged 20–24 and 25+. A multilevel model with country-level random effects showed that, after adjusting for the provider, method, and respondent characteristics, users aged 15–19 and 20–24 had 35% and 21% lower odds, respectively, of receiving good content of care ($p < .001$) compared with users aged 25+ (Table S5).

Of the two components, the proportion of users told of other FP methods was higher than the proportion informed of side effects across all providers and all three age groups (results not shown). Nonetheless, a greater proportion of older women reported methods counseling from comprehensive public/private providers compared with users aged 15–19 and 20–24 ($p < .001$).

Discussion

The present study included 33 countries—whose populations account for 87% of the population of sub-Saharan Africa—and provided a comprehensive, up-to-date picture of adolescent FP use by source of provision and method and how source and content of care compare with that of older women. We included more countries than other studies on the subject and uniquely categorized providers by both sector and capacity to provide short- and long-term methods. The striking but not unexpected results showed that younger women used more short-term methods from limited-capacity providers, which are predominantly outside the public sector. Half of FP users aged 15–19 utilized commercial drug sellers or informal providers as the first source of their method. In contrast, nearly 7 in 10 older women accessed FP from comprehensive public providers. IUD/implant use among women aged 15–19 and 20–24 was low, but among those using, more than 85% reported a public-sector source. Although FP users of all ages reported poor content of care, as documented previously [23], young women had an even lower content of care.

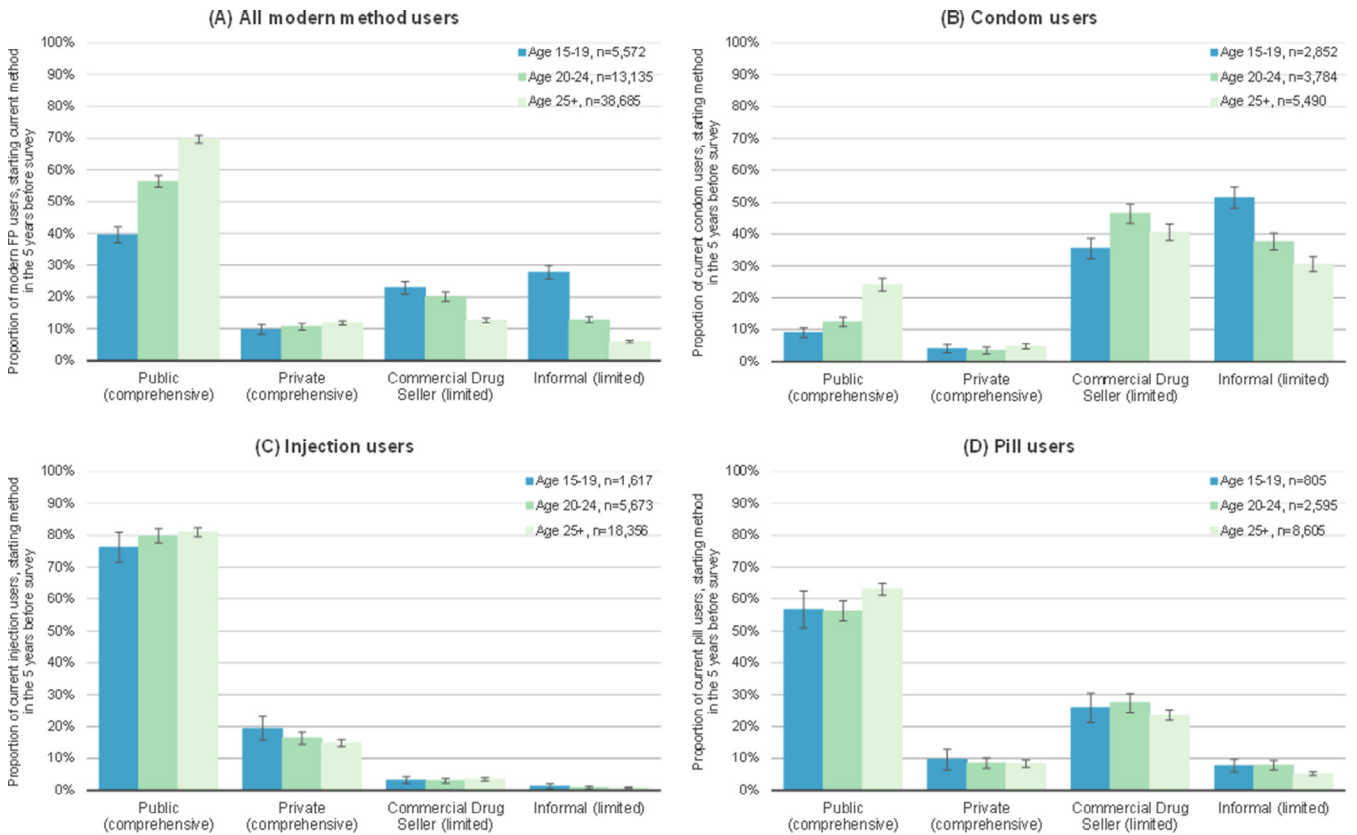
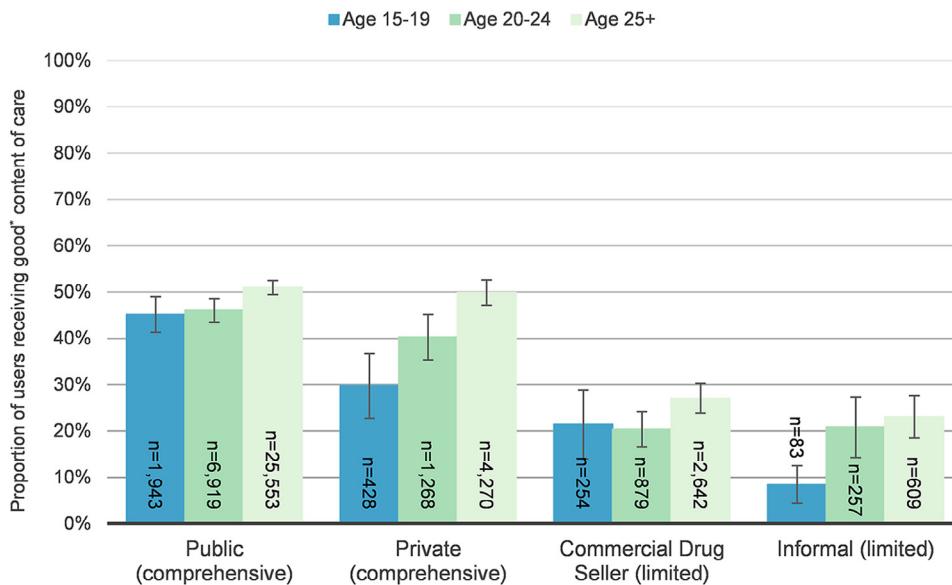


Figure 2. Comparing first providers of current modern method by age group among users who started using the method within 5 years of the survey among (A) all modern method users, (B) condom users, (C) injection users, and (D) pill users.



* Users told of side effects and informed of other FP methods

Figure 3. Percent who received good content of care from different providers, comparing by age group among current users of IUD/implant, injection, and pill who started using the method within 5 years of the survey.

Our findings are consistent with a previous study that found young women in low- and middle-income countries were more likely to source FP from the private sector compared with older women [22]. This finding is seemingly at odds with Biddlecom et al. [16], who found adolescents overwhelmingly prefer public facilities because of perceived quality. By examining current FP users and self-reported first source, our study moved beyond stated preferences to patterns of actual use. Although comprehensive public providers were significant sources of FP care, young women also utilized a variety of private and informal providers. This was strongly patterned by the respondent's method. Additional research is needed to understand how young people decide where to access FP care, including whether the method determines provider or vice versa, and how this decision-making process is influenced by social standing changes that accompany marriage and childbearing.

The change in the method mix between ages 15 and 24 highlights the divergent needs of adolescents and young women and the potential motivations for method use. For single women in high HIV/sexually transmitted infection (STI) risk settings, condoms, obtained from commercial sources or the respondent's male partner, offer dual protection from pregnancy and STIs, but condoms become less acceptable in longer-term relationships, including marriage [30], leading to a need for wider contraceptive choice from easily accessible and acceptable providers.

Research on young people's FP care preferences has found that characteristics of service, such as friendly, nonjudgmental provision and confidentiality [14,19,20], were the most important factors in deciding where to seek care. Our study highlighted the important role of commercial drug sellers as an FP source among users aged 15–19 and 20–24 in most countries considered here. Embarrassment in seeking contraceptive services has been reported as a common barrier [16] and may be resulting in young women utilizing providers (like a local pharmacy) offering faster, more discreet services compared with a clinic, where a more comprehensive range of FP methods might be available. Some characteristics of these limited-capacity, private-sector providers, for example, accessible locations, extended opening hours, quick service, and confidentiality [31], may be relevant to public-sector providers aiming to increase youth access and utilization. Countries diverging from the regional pattern of increasing public provider use with increasing age—namely, Burundi, Rwanda, and Zambia—had high comprehensive public provider use for all ages. Further research should consider how these countries have approached youth-friendly service implementation in the public sector.

Despite young people's perceptions of quality in the public sector [16], we found public provider users reported only slightly higher content of care compared with other provider categories, and content of care was poor across the board, especially for adolescents and young women. There was a surprising yet clear age gradient in increasing content of care among comprehensive private providers. Additionally, younger women more commonly accessed care from commercial drug sellers and informal sources—providers with the lowest FP counseling levels—compared with older women. This finding has implications for FP use as good content of care is particularly important when users initiate or switch methods to ensure informed choice and to help users utilize methods effectively. Additional focus is also needed on how to reach adolescents and young people with FP information through alternative sources, including mobile tech-

nology and mass media, that enhance high-quality counseling provided at the point of FP consultation. Reducing contraceptive discontinuation among women wishing to avoid pregnancy is critical to reducing high levels of unmet need, particularly in sub-Saharan Africa [32].

Limitations

The present study was limited by the accuracy of women's recall of the provider and content of care received during consultation. Although some users of IUD/implants, injections, or pills needed to recall counseling received up to 5 years before the interview, the median lengths of use for these methods were 6, 9, and 13 months for users aged 15–19, 20–24, and 25+, respectively. The study was also limited in assessing FP source by DHS response options, which may not reflect the full range of providers available in the country. For example, 10 surveys lacked a separate response option for NGO/faith-based providers. In many countries considered here, the line between “public” and “private” providers may be blurred or difficult for respondents to assess, particularly where private providers are subcontracted or receive government funds to operate.

Additionally, 1% of long-term method users aged 15–19 and 20–24 reported obtaining their method from limited-capacity providers; these users were largely from Mali and Sierra Leone, possibly reflecting the country-specific scope of practice among providers not captured in our categorizations. Across the 33 countries included in the present study, there were 109 unique FP provider types, reflecting the large variety of providers operating within countries and captured by DHS response options. Although efforts were made to consult experts familiar with country contexts to appropriately classify providers according to their theoretical capacity to provide short- and long-term methods, our categorizations may not reflect variation in individual provider capacity. We recognize that not all providers deemed “comprehensive” actually offer IUD/implant because of differences in regulation and health system constraints.

DHS does not ask male condom users about the content of care components considered here. It remains unclear how content of care for the youngest FP users—those more likely to utilize condoms—compares. Our estimates may be upwardly biased as we do not know content of care received among users who initiate and then discontinue their method. Additionally, our binary indicator of “good” content of care may not capture misinformation given about the safety, efficacy, and management of side effects for different methods [14].

There was notable heterogeneity across countries, and regional estimates should be interpreted with some caution. We provide country-level estimates for several indicators in supplementary tables and note where countries follow or diverge from regional estimates. Because of the small sample sizes of FP users, especially 15- to 19-year-olds, in many countries, it was not possible to compare country-level age-disaggregated results by method and provider category. Although multilevel models, adjusted for user's residence and country-level effects, confirmed provider use patterns by age separately among condom, injection, and pill users, it was not possible to account for other potentially important factors because of the small sample sizes.

Despite these limitations, our results suggest that interventions to improve youth FP services focusing solely on the public sector may encounter a coverage ceiling. Strategies engaging the private sector offer opportunities to achieve increased and, with

additional intervention and sufficient regulation, quality contraceptive coverage for youth [33]. The results suggest that uptake of certain methods and diversifying the method mix to meet the reproductive needs of adolescents and young women may be limited by method availability across specific provider types. Efforts expanding the range of methods offered by limited-capacity, nonfacility providers (like drug shops or community-based workers) suggest potential paths to reaching young people with more method choice [31,34,35], although more research is needed to understand how to improve highly variable quality. Recent studies in Senegal and Uganda of women's self-administration and community health worker provision of Sayana Press (a single-use injectable contraceptive) suggest possible interventions suitable for other countries in the region [36,37].

As numbers of young people in sub-Saharan Africa grow in the coming decades [1], health systems must be equipped to meet their FP needs with appropriate care and counseling, including HIV/STI protection. Improving contraceptive coverage among young women in need requires providers who are accessible (easy to visit, welcoming environments), stocked with a range of methods, and support informed choices [3]. Although quality needs improvement across all provider categories, policy makers concerned with youth FP programs should consider interventions targeting private providers to improve quality of care and capacity to offer a variety of methods at sources frequently used by young people.

Funding Sources

This research was supported by funding from Merck through its Merck for Mothers program. Merck had no role in the design, collection, analysis, and interpretation of data, in the writing of the manuscript, or in the decision to submit the manuscript for publication. The content of this publication is solely the responsibility of the authors and does not represent the official views of Merck. Merck for Mothers is known as MSD for Mothers outside the U.S. and Canada.

Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jadohealth.2017.09.013>.

References

- [1] UNFPA. The power of 1.8 billion: Adolescents, youth and the transformation of the future. 2014.
- [2] Patton GC, Sawyer SM, Santelli JS, et al. Our future: A Lancet commission on adolescent health and wellbeing. *Lancet* 2016;6736:3–57.
- [3] Chandra-Mouli V, McCarragher DR, Phillips SJ, et al. Contraception for adolescents in low and middle income countries: Needs, barriers, and access. *Reprod Health* 2014;11:1.
- [4] Woog V, Singh S, Browne A, et al. Adolescent women's need for and use of sexual and reproductive health services in developing countries. New York: Guttmacher Institute; 2015.
- [5] Blanc AK, Tsui AO, Croft TN, et al. Patterns and trends in adolescents' contraceptive use and discontinuation in developing countries and comparisons with adult women. *Int Perspect Sex Reprod Health* 2009;35:63–71.
- [6] Sedgh G, Ashford LS, Hussain R. Unmet need for contraception in developing countries: Examining women's reasons for not using a method. New York 2016.
- [7] Williamson LM, Parkes A, Wight D, et al. Limits to modern contraceptive use among young women in developing countries: A systematic review of qualitative research. *Reprod Health* 2009;6:3.
- [8] Bankole A, Malarcher S. Removing barriers to adolescents' access to contraceptive information and services. *Stud Fam Plann* 2010;41:117–24.
- [9] Jain AK. Examining progress and equity in information received by women using a modern method in 25 developing countries. *Int Perspect Sex Reprod Health* 2016;42:131–40.
- [10] Bruce J. Fundamental elements of the quality of care: A simple framework. *Stud Fam Plann* 1990;21:61–91.
- [11] WHO. Making health services adolescent friendly. Geneva: World Health Organization; 2012.
- [12] WHO. Global consultation on adolescent friendly health services. A consensus statement. Geneva: Department of Child and Adolescent Health and Development, World Health Organization; 2002.
- [13] Tylee A, Haller DM, Graham T, et al. Youth-friendly primary-care services: how are we doing and what more needs to be done? *Lancet* 2007;369:1565–73.
- [14] Wood K, Jewkes R. Blood blockages and scolding nurses: Barriers to adolescent contraceptive use in South Africa. *Reprod Health Matters* 2006;14:109–18.
- [15] Sidze EM, Lardoux S, Speizer IS, et al. Young women's access to and use of contraceptives: The role of providers' restrictions in urban Senegal. *Int Perspect Sex Reprod Health* 2014;40:176–83.
- [16] Biddlecom AE, Munthali A, Singh S, et al. Adolescents' views of and preferences for sexual and reproductive health services in Burkina Faso, Ghana, Malawi and Uganda. *Afr J Reprod Health* 2007;11:99–100.
- [17] Chandra-Mouli V, Chatterjee S, Bose K. Do efforts to standardize, assess and improve the quality of health service provision to adolescents by government-run health services in low and middle income countries, lead to improvements in service-quality and service-utilization by adolescents? *Reprod Health* 2016;13:10.
- [18] Denno DM, Hoopes AJ, Chandra-Mouli V. Effective strategies to provide adolescent sexual and reproductive health services and to increase demand and community support. *J Adolesc Health* 2015;56:S22–41.
- [19] Michaels-Igbokwe C, Terris-Prestholt F, Lagarde M, et al. Young people's preferences for family planning service providers in rural Malawi: A discrete choice experiment. *PLoS ONE* 2015;1–18.
- [20] Erulkar AS, Onoka CJ, Phiri A. What is youth-friendly? Adolescents' preferences for reproductive health services in Kenya and Zimbabwe. *Afr J Reprod Health* 2005;9:51–8.
- [21] Amuyunzu-Nyamongo M, Biddlecom AE, Ouedraogo C, et al. Qualitative evidence on adolescents views of sexual and reproductive health in sub-Saharan Africa. New York: Guttmacher Institute; 2005.
- [22] Murray NJ, Dougherty L, Stewart L, et al. Are adolescents and young adults more likely than older women to choose commercial and private sector providers of modern contraception? Washington (DC): Futures Group; 2005.
- [23] Campbell OMR, Benova L, Macleod D, et al. Who, what, where: An analysis of private sector family planning provision in 57 low- and middle-income countries. *Trop Med Int Heal* 2015;20:1639–56.
- [24] United Nations Department of Economic and Social Affairs. World population prospects: The 2015 revision. 2015.
- [25] Bradley SEK, Croft TN, Fishel JD, et al. Revising unmet need for family planning. DHS Analytical Studies No 25 2012:i–xiii, 1–75.
- [26] Hubacher D, Trussell J. A definition of modern contraceptive methods. *Contraception* 2015;92:420–1.
- [27] The DHS Program. DHS model questionnaire—phase 7 (English, French). 2015.
- [28] Footman K, Benova L, Goodman C, et al. Using multi-country household surveys to understand who provides reproductive and maternal health services in low- and middle-income countries: a critical appraisal of the Demographic and Health Surveys. *Trop Med Int Heal* 2015;20:589–606.
- [29] RamaRao S, Jain AK. Aligning goals, intents, and performance indicators in family planning service delivery. *Stud Fam Plann* 2015;46:97–104.
- [30] Mmari K, Herbert A, Van Lith L, et al. What are the social and emotional factors that influence adolescent condom use in LMIC? Findings from a rapid literature review. 2014.
- [31] Gonsalves L, Hindin MJ. Pharmacy provision of sexual and reproductive health commodities to young people: A systematic literature review and synthesis of the evidence. *Contraception* 2017;95:339–63.
- [32] Jain AK, Obare F, RamaRao S, et al. Reducing unmet need by supporting women with met need. *Int Perspect Sex Reprod Health* 2013;39:133–41.
- [33] Peters DH, Mirchandani GG, Hansen PM. Strategies for engaging the private sector in sexual and reproductive health: How effective are they? *Health Policy Plan* 2004;19(Suppl. 1):i5–21.
- [34] Akol A, Chin-Quee D, Wamala-Mucheri P, et al. Getting closer to people: Family planning provision by drug shops in Uganda. *Glob Heal Sci Pract* 2014;2:472–81.
- [35] Shah NM, Brieger WR, Peters DH. Can interventions improve health services from informal private providers in low and middle-income countries? A comprehensive review of the literature. *Health Policy Plan* 2011;26:275–87.
- [36] Burke HM, Mueller MP, Perry B, et al. Observational study of the acceptability of Sayana® Press among intramuscular DMPA users in Uganda and Senegal. *Contraception* 2014;89:361–7.
- [37] Keith B, Wood S, Tiffit S, et al. Home-based administration of Sayana® Press: review and assessment of needs in low-resource settings. *Contraception* 2014;89:344–51.