PATTERNS OF REPRODUCTIVE HEALTH AMONG WOMEN WITH DISABILITIES

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Patterns of Reproductive Health among Women with Disabilities

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PREFACE

The Demographic and Health Surveys (DHS) Program is one of the principal sources of international data on fertility, family planning, maternal and child health, nutrition, mortality, environmental health, HIV/AIDS, malaria, and provision of health services.

One of the objectives of The DHS Program is to analyze DHS data and provide findings that will be useful to policymakers and program managers in low- and middle-income countries. DHS Analytical Studies serve this objective by providing in-depth research on a wide range of topics, typically including several countries and applying multivariate statistical tools and models. These reports are also intended to illustrate research methods and applications of DHS data that may build the capacity of other researchers.

The topics in this series are selected by The DHS Program in consultation with the U.S. Agency for International Development.

It is hoped that the DHS Analytical Studies will be useful to researchers, policymakers, and survey specialists, particularly those engaged in work in low- and middle-income countries.

Sunita Kishor
Director, The DHS Program

ABSTRACT

Women with disabilities may experience disproportionately high unmet need for sexual and reproductive health services and face excessive barriers to accessing these services. This study leverages Demographic and Health Survey (DHS) data to investigate differentials in access to health services and reproductive health outcomes in nine countries that applied the Disability Module with Washington Group Short Set of questions on functional limitations.

This study is one of the first multi-country analyses of disability and multiple reproductive health outcomes. This paper uses both bivariate (crosstabs with chi-square tests of independence) and multivariable regression analysis to investigate association between women's disability status and 10 outcomes in these areas: contraceptive knowledge; difficulties accessing health services; use of maternal health services; fertility intentions; recency of sex; and experience of unintended pregnancy.

The prevalence of disability among women of reproductive age in study countries ranges from 1% (Nigeria) to 5% (Pakistan). In contrast to our expectation, we did not find widespread disadvantage in health care access and health outcomes for women with disabilities. Rather, we found that women with disabilities and those without are similar in terms of their fertility intentions, sexual activity, and use of maternal health services. Encouragingly, we find that women with disabilities have similar or higher rates of contraceptive knowledge and use and are consistently less likely to experience unintended pregnancy. Of concern, we find that in almost half of our study countries women with disabilities experience greater difficulty accessing medical services when sick. Health systems should continue to expand availability and improve quality of reproductive health services for all potential clients, including those with disabilities, and should focus on ensuring care that centers disabled clients' needs, dignity, and autonomous choices.

Key words: disability; reproductive and sexual health; equity

ACRONYMS AND ABBREVIATIONS

ANC   antenatal care

DHS   Demographic and Health Survey

HCW   health care worker

IPV   intimate partner violence

LMIC   low- and middle-income country

SRH   sexual and reproductive health

SRHS   sexual and reproductive health services

WG-SS   Washington Group short set

WHO   World Health Organization

1   BACKGROUND

Although disability is historically ill-integrated into development efforts, there is growing acceptance of the concept of disability-inclusive development, predicated on the belief that the "experience of underdevelopment" is different for people with disabilities (and therefore requires different remedies) (Grech 2021). Disability is explicitly mentioned in the World Health Organization's (WHO) rationale for taking a rights-based approach to providing contraceptive information and services (WHO 2014), in some of the sustainable development goals (including 3.7 on universal access to sexual and reproductive health-care services and 10.2 on the inclusion of all regardless of (among others) disability) (United Nations 2015), and in the Equity and Non-discrimination Rights Principle of FP2020 (now FP2030) (FP2020 2015; Stover and Sonneveldt 2017). However, the sexual and reproductive health (SRH) needs of persons with disabilities is a neglected area in both research and practice (Carew et al. 2017; Hameed et al. 2020). Even where an ideological commitment to inclusiveness in the provision of sexual and reproductive health services (SRHS) exists, it can founder on a lack of actionable data about the experiences and needs of persons with disabilities, and the extent to which they may differ from the general population (Abdul Karimu 2018). A recent review calls for more investigation of the barriers to good reproductive health that women with disabilities may experience (Fraser, Corby, and Meaney-Davis 2021).

1.1   Disability and Reproductive Health

Women with disabilities may experience more challenges than women without disabilities in having their reproductive health needs met, whether through stigma, increased risk of violence or abuse, or lack of access to care.

On the other hand, this assumption may fail to take into account the agency and resilience of women with disabilities. Perhaps women with disabilities, in fact, have greater access to and interactions with the health services needed to implement their reproductive intentions, whether through (i) the integration of family planning with other health services, (ii) acquired knowledge of how to navigate the health system due to experience seeking care related to their disability, or (iii) developing social capital to advocate for their own needs and services.

The extent to which women with disabilities experience poorer health outcomes and decreased access remain empirical questions lacking complete answers. A review of the literature on reproductive desires and sexual behavior, access to health care, contraceptive knowledge and use, fertility, and unintended pregnancy among women with disabilities finds incomplete and inconsistent information on the reproductive goals and health service needs of women with disabilities and how well they do or do not meet those goals, particularly in low- and middle-income countries (LMICs).

One of the prevailing themes of the literature is that health care workers (HCWs), family members/caregivers, and society at large assume that people with disabilities are inherently asexual, uninterested in sex, and uninterested in or incapable of parenthood (Ahumuza et al. 2014; Burke et al. 2017; Iezzoni 2009; Yimer and Modiba 2019). A study in Nepal of attitudes and behaviors with regard to disability, pregnancy, childbirth, and motherhood among women with and without disabilities found that misconceptions abound (that disability renders women asexual, infecund, incapable of caring for children;

that all disabilities are transmissible to children), and that women with disabilities are not considered to have sexual and reproductive health needs or rights (including that they are discouraged from marrying/having a family; that their pregnancies/childbirth would just be a burden to family/society) (Devkota, Kett, and Groce 2019).

Sometimes these larger societal assumptions manifest themselves in Orwellian ways: an intervention in Ecuador to improve access to SRH information for deaf women found that Ecuadorian Sign Language lacked important vocabulary, including "confidentiality," "consent," "sexual transmission," and "vulva" (Robles-Bykbaev et al. 2019).

It is widely recognized that the lives of people living with disabilities are shaped by both their physical and social environment, including their degree of participation and inclusion. While the effect of a given barrier to inclusion, and therefore the corresponding facilitator of inclusion, is impairment-dependent and not one-size-fits-all (Latham-Mintus and Cordon 2021), when efforts are made to improve access to sexual and reproductive health care and knowledge for women with disabilities, those efforts bear fruit. An intervention in the Philippines among women with disabilities had outcomes including increased knowledge of sexual and reproductive health and rights, increased self-confidence and sense of social inclusion, and increased access to/uptake of sexual and reproductive health care (Devine et al. 2017).

1.1.1 Reproductive ideation and sexual behavior

While the data on sexual behavior and reproductive ideation have gaps, it is clear that women with disabilities seek to bear children and engage in sexual relationships.

Fertility Desires. Similar proportions of women with and without disabilities in the United States and Sierra Leone want to have a(nother) child in the future (Bloom et al. 2017; Trani et al. 2011). However, there is some evidence that among women in the United States who already have a child, women with disabilities may experience a mismatch between their fertility desires (what they want) and fertility intentions (what they plan to do) that women without disabilities do not: women with disabilities are more likely to want another child but less likely to intend to have one, and among mothers who both want and intend to have a child, mothers with disabilities are more likely to be uncertain that they can achieve their desired outcome (Shandra, Hogan, and Short 2014).

Ideal Number of Children. There is no readily available information on whether women with and without disabilities have different ideas about the ideal total number of children they would like to have.

Recency of Sex. While a study in Ethiopia among women with sight and hearing disabilities found some differences in sexual history by kind of disability (that is, sight or hearing impairment), regardless of disability type, the majority of respondents had ever had sex and had had sex in the past year (Yimer and Modiba 2019). Two different studies in Ethiopia among young people with disabilities found that half of respondents were sexually active (Alemu and Fantahun 2011; Kassa et al. 2014). A study using data from seven of the United States found no differences in recency of sexual activity among women with and without disabilities (Haynes et al. 2018). A study in Portugal found that while some adolescent girls with intellectual disabilities were sexually active, they were less likely to be sexually active than adolescent girls without intellectual disabilities (Nunes et al. 2017), while a study of adolescents in Oregon found that girls

with disabilities are more likely to have had intercourse than girls without disabilities (Senders and Horner-Johnson 2022).

1.1.2 Health care access

Difficulty accessing health services is a common theme in the existing literature, though some difficulties experienced by both women with and without disabilities (cost, travel time, long waits) may have a greater impact on those with disabilities. As one participant in a study in Uganda put it, "*What puts me off is that when I go for antenatal care and I am told to wait until they call my number. I do not have a wheelchair and I cannot sit on the bench. I have to sit on the floor*" (Ahumuza et al. 2014).

Difficulty Accessing Health Services. An array of disability-specific difficulties to accessing health care exists. Women in Uganda with disabilities reported barriers caused by physical inaccessibility of health facilities, HCW attitudes towards women with disabilities seeking sexual and reproductive health care, inadequate HCW training/skills for the provision of sexual and reproductive health care to patients with disabilities, and experiences of marginalization/discrimination (including assumptions about whether persons with disabilities should be sexually active) (Ahumuza et al. 2014). Young women in Nigeria who have hearing impairments and use sign language reported hearing disability-specific challenges in interactions with HCWs, including the rarity of interpretation services being available at the facility, not being able to make themselves understood, not understanding everything a HCW said, missing a turn to be seen due to not hearing their name called, having concerns about confidentiality, and not receiving all the services/information they desire. These women also reported not seeking care for reasons related to hearing impairment, including communication problems, not having someone to accompany them (and interpret), and not liking the way they had previously been treated by a HCW (Arulogun et al. 2013). Young women in Senegal reported disability-specific barriers to sexual and reproductive health care services including discrimination by HCW, communication barriers, physical inaccessibility, and needing to be accompanied to seek care (Burke et al. 2017). Women with disabilities living in humanitarian settings in Kenya, Nepal, and Uganda reported different health care experiences by country, with women in Uganda having the worst experiences due to negative provider attitudes (Tanabe et al. 2015).

Women with disabilities in the United States discussing access to contraceptive care reported challenges with accessibility and lack of accommodations (which differ by type of disability and the impacts of which run the gamut from being physically dangerous, to being invasive of privacy, to reducing the quality of care) and negative, disrespectful clinician attitudes (Horner-Johnson et al. 2021). A second publication from the same study elaborated on other barriers, including clinician uncertainty about how contraception and disability might interact (due to a lack of research/trials), a perceived taboo on discussing contraception, and clinician lack of support for informed decision making (not discussing options, making decisions for women about the appropriate method for them) (Horner-Johnson et al. 2022).

A review of English-language publications found that aside from individual factors (age, language), environmental (non-accessible facilities and media, wait and travel times), attitudinal (assumed asexuality, stigma/negative attitudes from HCWs, lack of agency from parents/caregivers), and institutional factors (no explicit policies including persons with disabilities, no data on persons with disabilities, no technical expertise in providing care to persons with disabilities, and lack of confidentiality for those needing communication support) affect, and largely hinder, access to and uptake of family planning among

girls/women with disabilities; adolescent girls may be particularly affected (Fraser, Corby, and Meaney-Davis 2021).

Antenatal Care Visits/Facility Delivery. While there is no readily available information on whether women with and without disabilities attend different numbers of antenatal care visits or have different likelihoods of delivering in a health facility, the access challenges described above affect women with disabilities' experiences of antenatal and delivery care. The picture is somewhat complicated by socioeconomic factors: a study in Sierra Leone found no difference between women with disabilities and without disabilities with regard to access to maternal health care (access to care was linked to wealth rather than impairment) (Trani et al. 2011), and a study in Uganda found that use of care increased over time, including for people with disabilities, with no clear pattern of use (or non-use) by disability status when other background characteristics are considered (Mac-Seing et al. 2022).

1.1.3   Contraception and pregnancy

The assumed asexuality of people with disabilities described above has secondary effects. From this belief, it follows that people with disabilities are assumed not to be at risk of pregnancy or sexually transmissible infections and are not in need of either contraceptive knowledge or contraceptive access. When women with disabilities do seek family planning or become pregnant, they may encounter negative reactions, including outright disapproval from HCWs.

Contraceptive Knowledge. Understanding how much women with disabilities know about contraception is complicated by the lack of a comparison group in most studies. Young women in Senegal reported widespread knowledge of condoms, a lesser but not nonexistent degree of knowledge of other modern methods, and that they did not have easy access to information about SRHS (Burke et al. 2017). Women with disabilities living in humanitarian settings in Kenya, Nepal, and Uganda reported varying degrees of knowledge of contraception but a uniform desire to know more (Tanabe et al. 2015). While most participants in a study in Ethiopia among women with sight and hearing disabilities knew of several methods of contraception, a minority had comprehensive knowledge (Yimer and Modiba 2019); another study in Ethiopia found that young people with disabilities had generally low knowledge of sexual and reproductive health issues, with some differences by type of disability (Kassa et al. 2016). An intervention among deaf women in Ecuador found that knowledge of family planning methods was uniformly low (Robles-Bykbaev et al. 2019).

A systematic review of original research studies in "very high human development countries" found some evidence of lower knowledge among women with disabilities (Horner-Johnson et al. 2019).

Contraceptive Use. Few studies report an exact contraceptive prevalence rate, and most lack a comparison group. Studies of youth with disabilities in Ethiopia found between one third (Kassa et al. 2014) and one half (Alemu and Fantahun 2011) of those who have ever had sex reported using contraception during their first sexual encounter. A minority of sexually active women with sight and hearing disabilities in Ethiopia reported current use of contraception (Yimer and Modiba 2019). Young women in Senegal reported sparse use of contraception (Burke et al. 2017)*.* A study in Sierra Leone found no difference in contraceptive use between women with and without disabilities (Trani et al. 2011).

A study using data from seven of the United States found no differences in use of contraception among women with and without disabilities, but did find differences in kind of contraception by disability type, namely more use of permanent methods among women with disabilities (Haynes et al. 2018). National studies in the United States found that women with disabilities are significantly less likely than those without to have received some family planning services, with some differences by type of disability; however women with disabilities are more likely to have received emergency contraception and sterilization (Mosher et al. 2017) and women with disabilities use sterilization and no method of contraception more, and the pill less, than women without disabilities (Mosher et al. 2018). A systematic review of original research studies in "very high human development countries" had mixed findings with regard to contraceptive use by type of disability and type of contraception (Horner-Johnson et al. 2019). A study in Portugal found that adolescent girls with intellectual disabilities were more likely to make a first ob-gyn appointment because of a need for contraception, equally likely to use the pill, and slightly more likely to use a transdermal patch method of contraception than adolescent girls without intellectual disabilities, and that there was no difference in adherence to contraception between girls with and without intellectual disabilities (Nunes et al. 2017). A study in Oregon found that among girls having kinds of sex that put them at risk of pregnancy, differences by disability status in use of contraception (at all and by efficacy level) are small but still exist (Senders and Horner-Johnson 2022).

Pregnancy. In Ethiopia, slightly more than half of sexually active young women with disabilities (Kassa et al. 2014) and a majority of sexually active women with sight and hearing disabilities (Yimer and Modiba 2019) had experienced pregnancy. A case-control survey of married women in India found that women with disabilities were significantly less likely to have ever been pregnant than those without disability (Murthy et al. 2014). A study in Uganda found both overlap and differences in the determinants of early childbearing for women with and without disabilities (Kwagala and Wandera 2021).

A yearlong panel survey in the United States found no difference in the percentage of women with and without disabilities who experienced pregnancy during the study, although women with complex disabilities were less likely to have had a pregnancy (Horner-Johnson et al. 2016).

Unintended Pregnancy. In Ethiopia, two studies among young women with disabilities (Alemu and Fantahun 2011; Kassa et al. 2014) and one among women with sight and hearing disabilities (Yimer and Modiba 2019) found that a majority of participants who had ever been pregnant had experienced an unintended pregnancy.

A study in Portugal found that adolescent girls with intellectual disabilities were less likely to experience unintended pregnancy than adolescent girls without intellectual disabilities (Nunes et al. 2017). A systematic review of original research studies in "very high human development countries" had inconclusive findings with regard to unintended pregnancy and disability (Horner-Johnson et al. 2019).

A study in the United States found that among pregnancies in the preceding 5 years, a higher proportion were unintended among women with disabilities than among women without disabilities, with some differences by type of disability; disability type may contribute to risk factors for unintended pregnancy (such as, women with hearing impairment may have more communication issues with HCWs than women with low vision) (Horner-Johnson et al. 2020).

Separate from the incidence of unintended pregnancy, women with disabilities may have different causes of unintended pregnancy. The U.S. study mentioned above found that disability type may contribute to risk factors for unintended pregnancy (Horner-Johnson et al. 2020).

In addition, there may be a (complicated) relationship among intimate partner violence (IPV), reproductive coercion, pregnancy, unintended pregnancy, and disability. A study in the United States among women who had ever experienced IPV found that nearly three quarters had experienced some kind of reproductive control (for example, contraception sabotage before sex, condom manipulation during sex, interference with post-conception health care) and that relationships that included reproductive control did not always include physical violence (Moore, Frohwirth, and Miller 2010). A study in Uganda found that disability status is significantly associated with experience of IPV after controlling for women's characteristics, and that partner behavioral factors and parental history of violence were stronger factors (Kwagala, Galande, and Musimami 2019).

Participants in a study in the United States among women with disabilities who experienced unintended pregnancy via reproductive coercion uniformly felt that having a disability made it easy for their partners to threaten or reproductively coerce them (Alhusen et al. 2020). Studies in the United States found women exposed to IPV and reproductive coercion experienced a higher prevalence of unintended pregnancy (Miller et al. 2010; Miller et al. 2014), delayed obtaining needed contraceptives, and were less likely to use a prescription method than other women (Early et al. 2015). If women with disabilities are more likely to experience IPV and reproductive coercion, they may also be more likely to experience these negative reproductive health outcomes.

1.2　Data on Disabilities in Low- and Middle-Income Countries

Almost all the existing literature on the SRH experiences of women with disabilities in countries other than the United States and Canada is composed of small, qualitative or mixed-methods studies. Many of these studies include only women with disabilities, which makes it difficult to understand how their needs and experiences differ from those of women without disabilities. Most of the studies took place in a small number of sites (largely capital cities) and focused on a specific kind of disability, which makes it difficult to know if their findings apply to women with disabilities more widely. Outside of Canada there is no analysis of administrative data. In LMICs, only studies in Uganda rely on nationally representative data sources (specifically, Uganda Demographic and Health Survey (DHS) datasets).

Definitions of disability are inconsistent across existing studies, rendering comparability difficult.

In 2015, The DHS Program adopted an optional module on disability, based on the Washington Group Short Set (WG-SS) of questions on functional limitations (Washington Group on Disability Statistics 2020b). As with other household roster questions in the DHS Household questionnaire, the module relies on a single household respondent to provide proxy answers for other *de facto* household members; the disability module questions are asked only about those members age 5 and up. Although relying on proxy reports has limitations (Elkasabi 2021), the use of the DHS disability module opens new doors for obtaining nationally representative perspectives on the health needs and experiences of people with disabilities that are comparable across countries and over time. The availability of standardized data on disabilities in selected DHS provides an opportunity to redress this gap in published literature and to confirm whether the disadvantages in health access and outcomes suggested by these smaller studies hold true at a wider scale.

1.3   Study Purpose

This study analyzes the relationship between disability status and numerous health outcomes for women using nationally representative data on disability in nine countries. This study aims to fill the research gap on disabled women's reproductive health needs in LMICs. It fundamentally addresses the research question: Are women with disabilities particularly disadvantaged or advantaged when it comes to their reproductive health and health care access? To what extent? Where? And with regard to which health outcomes?

2 METHODS

2.1 Data and Methods

This study uses data from DHS conducted since 2010 and containing standardized disability measures. DHS are nationally representative, household-based surveys of women of reproductive age (age 15–49)[1]. We include nine surveys in this study. The surveys are the 2016 Haiti DHS (N = 15,393), the 2018 Mali DHS (N = 10,519), the Nigeria 2018 DHS (N = 12,364), the 2017–18 Pakistan DHS (N = 12,364), the Rwanda 2019–20 DHS (N = 14,364), the Senegal 2018 DHS (N = 9,414), the 2016 South Africa DHS (N = 8,514), the 2016 Timor-Leste DHS (N = 12,607), and the Uganda 2016 DHS (N = 18,506).

2.2 Measuring Disability with DHS Surveys

Questions on disability have been included in numerous DHS surveys. The 1993 Ghana DHS was the first survey to ask about disabilities, collecting the disability status of all persons in the household schedule (GSS and Macro International 1994). Since then, some surveys directed disability questions to adults (see, for example, 2008–09 Albania DHS (INSTAT, IPH, and ICF Macro 2010)) while others inquired about the disability status specifically of children (for example, 2013–14 Democratic Republic of Congo DHS (MPSMRM, MSP, and ICF International 2014)). These surveys varied as to whether disability questions were administered in the household questionnaire or the adult woman and man's questionnaires. There was also variation in the phrasing and content of the questions, rendering comparison across surveys difficult.

In 2015 The DHS Program established a standard optional module on disability (ICF International 2016). The standard module adapted its questions from the WG-SS of questions on functional limitations (Washington Group on Disability Statistics 2020b). The respondent to the household questionnaire provides information on all *de facto* household members age 5 and above.

The module covers six functional areas: vision, hearing, communication, cognition (remembering and concentrating), mobility (walking or climbing steps), and self-care (washing all over and dressing). Each person's level of difficulty in each domain is categorized on a 4-point scale: no difficulty, some difficulty, a lot of difficulty, or cannot perform task/function at all. The specific questions are shown in Figure 1.

A systematic study found that prevalence estimates of disability status as reported by the household questionnaire respondent were broadly consistent with those from self-reported disability status (Elkasabi 2021). However, there is likely some over-reporting of disabilities related to communication ability with proxy reports and underreporting of disabilities that are not easily observable.

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[1] The Haiti DHS also includes 1,022 women age 50 and older.

Figure 1   DHS Disability Module questions

	IF AGE 5 OR OLDER					
LINE NO.	DISABILITY					
	26	27	28	29	30	31
	Does (NAME) wear glasses or contact lenses to help them see?	I would like to know if (NAME) has difficulty seeing even when wearing glasses or contact lenses. Would you say that (NAME) has no difficulty seeing, some difficulty, a lot of difficulty, or cannot see at all?	I would like to know if (NAME) has difficulty seeing. Would you say that (NAME) has no difficulty seeing, some difficulty, a lot of difficulty, or cannot see at all?	Does (NAME) wear a hearing aid?	I would like to know if (NAME) has difficulty hearing even when using a hearing aid. Would you say that (NAME) has no difficulty hearing, some difficulty, a lot of difficulty, or cannot hear at all?	I would like to know if (NAME) has difficulty hearing. Would you say that (NAME) has no difficulty hearing, some difficulty, a lot of difficulty, or cannot hear at all?
		1 = NO DIFFICULTY SEEING 2 = SOME DIFFICULTY 3 = A LOT OF DIFFICULTY 4 = CANNOT SEE AT ALL 8 = DON'T KNOW	1 = NO DIFFICULTY SEEING 2 = SOME DIFFICULTY 3 = A LOT OF DIFFICULTY 4 = CANNOT SEE AT ALL 8 = DON'T KNOW	(1)	(1) 1 = NO DIFFICULTY HEARING 2 = SOME DIFFICULTY 3 = A LOT OF DIFFICULTY 4 = CANNOT HEAR AT ALL 8 = DON'T KNOW	1 = NO DIFFICULTY HEARING 2 = SOME DIFFICULTY 3 = A LOT OF DIFFICULTY 4 = CANNOT HEAR AT ALL 8 = DON'T KNOW
1	Y N 1 2 ↓ GO TO 28	1 2 3 4 8 (GO TO 29)	1 2 3 4 8	Y N 1 2 ↓ GO TO 31	1 2 3 4 8 (GO TO 32)	1 2 3 4 8

	32	33	34	35
	I would like to know if (NAME) has difficulty communicating when using his/her usual language. Would you say that (NAME) has no difficulty understanding or being understood, some difficulty, a lot of difficulty, or cannot communicate at all?	I would like to know if (NAME) has difficulty remembering or concentrating. Would you say that (NAME) has no difficulty remembering or concentrating, some difficulty, a lot of difficulty, or cannot remember or concentrate at all?	I would like to know if (NAME) has difficulty walking or climbing steps. Would you say that (NAME) has no difficulty walking or climbing steps, some difficulty, a lot of difficulty, or cannot walk or climb steps at all?	I would like to know if (NAME) has difficulty washing all over or dressing. Would you say that (NAME) has no difficulty washing all over or dressing, some difficulty, a lot of difficulty, or cannot wash all over or dress at all?

	1 = NO DIFFICULTY
	    COMMUNICATING
	2 = SOME DIFFICULTY
	3 = A LOT OF DIFFICULTY
	4 = CANNOT COMMUNICATE
	    AT ALL
	8 = DON'T KNOW
		1 = NO DIFFICULTY
		    REMEMBERING/
		    CONCENTRATING
		2 = SOME DIFFICULTY
		3 = A LOT OF DIFFICULTY
		4 = CANNOT REMEMBER/
		    CONCENTRATE AT ALL
		8 = DON'T KNOW
			1 = NO DIFFICULTY WALKING
			    OR CLIMBING
			2 = SOME DIFFICULTY
			3 = A LOT OF DIFFICULTY
			4 = CANNOT WALK OR
			    CLIMB AT ALL
			8 = DON'T KNOW
				1 = NO DIFFICULTY WASHING
				    OR DRESSING
				2 = SOME DIFFICULTY
				3 = A LOT OF DIFFICULTY
				4 = CANNOT WASH OR
				    DRESS AT ALL
				8 = DON'T KNOW

1	1 2 3 4 8	1 2 3 4 8	1 2 3 4 8	1 2 3 4 8

In line with the cutoff recommended by the Washington Group on Disability Statistics for analysis of the WG-SS, we take "a lot of difficulty" or "cannot perform task/function at all" as indication of the presence of a disability[2] (Washington Group on Disability Statistics 2020a). Our summary disability measure is a dichotomous measure of the presence of any disability (that is, a lot of difficulty or cannot perform the function at all) in at least one of the six functional areas.

2.3 Analytical Strategy

Our main research question is whether women with disabilities differ from women without disabilities with regard to specific health outcomes, and specifically whether they experience more or less disadvantage compared to women without disabilities. After presenting basic descriptive statistics, our primary analytical strategy uses multivariable regressions. We estimate a parsimonious regression model with a basic set of background characteristics as control variables to isolate the effect of disability status on each outcome. The control variables in each model are age, education, household wealth, residence, marital status, and parity. The use of a general linear model or logistic model depends on whether the outcome is expressed as a continuous or dichotomous variable.

We also estimated unadjusted and adjusted regression models separately by disability in each functional domain (type of disability) and by level of difficulty, for each outcome in each survey. We do not report these results here. These results revealed similar patterns of association (or lack of association) with each outcome as with our measure of any disability, although some associations were less likely to remain statistically significant in fully adjusted models for certain disability types, particularly those that are less common. In summary, our results do not seem to vary by type of disability.

Data are not pooled; rather models are estimated separately for each survey. Analyses are conducted in Stata SE 17. All analyses apply sample weights that account for sampling probability and nonresponse and *svy* commands to adjust for the clustered sampling design.

2.4 Reproductive Health Outcomes

We analyze 10 health outcomes in the areas of reproductive ideation and sexual behavior, health care access, and family planning and pregnancy. These outcomes are as follows:

Reproductive ideation and sexual behavior

- Fertility desires

- Ideal number of children

- Recency of sex

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[2] In a companion report, DHS Comparative Reports No. 51, the authors refer to this level of disability as "severe disability." This study does not use this term.

Health care access

- Difficulty accessing health services

- Attending four or more antenatal care visits

- Facility delivery

Contraception and pregnancy

- Contraceptive knowledge

- Current contraceptive use (any method)

- Pregnancy

- Unintended pregnancy

Fertility Desires. Fertility desire is a neutral health outcome. One response does not indicate poorer health status or greater disadvantage than another. Nonetheless, statistically significant differences with respect to disability status can indicate that women with disabilities may have substantially different health needs than other women. If women with disabilities are more likely to want a child soon, that may indicate a greater need for maternal health services, whereas if they are more likely to want to delay or limit childbearing, that may indicate a greater need for contraceptive services.

Fertility desires are measured at the time of the survey and pertain to desire for future children. Response options are: want a(nother) child within two years; want a(nother) child after two or more years; want a(nother) child, but unsure of timing or is undecided; want no more children; sterilized or declared infecund. We construct a dichotomous outcome variable keeping "want a(nother) child within two years" as our outcome of interest and combining all other responses together as the null category.

Ideal Number of Children. Ideal number of children is constructed as a continuous variable and used in a linear regression. The few women who did not provide a numerical response are omitted from analysis. As with fertility desires, ideal number of children is a neutral health outcome, but may indicate the degree to which women with a disability will need either maternal health services or contraceptive services over the course of their lives.

Recency of Sex. Recency of sex is often used as a proxy measure of sexual frequency and can be an indicator of need for certain reproductive and sexual health services. We use a binary variable with women who have had sex in the past month as the "yes" category and all others (including those who have never had sex) in the "no" category.

Difficulty Accessing Health Services. Difficulty accessing health services is assessed with a question inquiring whether or not any of the following four factors is a big problem when the respondent is getting medical advice or treatment when sick (Figure 2).

Figure 2   DHS question assessing problems accessing health services

1108	Many different factors can prevent women from getting medical advice or treatment for themselves. When you are sick and want to get medical advice or treatment, is each of the following a big problem or not a big problem:		BIG PROBLEM	NOT A BIG PROBLEM
	a) Getting permission to go to the doctor?	a) PERMISSION TO GO	1	2
	b) Getting money needed for advice or treatment?	b) GETTING MONEY	1	2
	c) The distance to the health facility?	c) DISTANCE	1	2
	d) Not wanting to go alone?	d) GO ALONE	1	2

This outcome is constructed as a binary variable with difficulty accessing health services coded as "yes" if one or more of the four factors is a big problem, and "no" otherwise. We also examine each difficulty separately.

Attending Four or More Antenatal Care Visits. This outcome is restricted to those women who have had a live birth in the past 5 years. Women with live births in this timeframe were asked if they had any antenatal care (ANC) while pregnant and, if so, the number and timing of such visits. From this information, we calculate a dichotomous variable coded "yes" if she had at least four ANC visits and "no" if she had fewer than four or no such visits. A minimum of four ANC visits is a positive health outcome.

Facility Delivery. Like ANC visits, facility delivery is a positive outcome. It is also a binary variable restricted to women with a live birth in the past 5 years. Women are coded "yes" if they delivered at a public or private health care facility of any level, and "no" if they delivered at home or elsewhere.

Contraceptive Knowledge. DHS surveys ask women if they have heard of 13 specific family planning methods, including both modern and traditional methods. Contraceptive knowledge is calculated as the sum of the number of methods that women know. As a continuous variable, linear regression models are used for this outcome.

Current Use of Contraception. Current use of contraception is a dichotomous variable coded "yes" if a woman reports using any method to prevent or delay pregnancy, and "no" if otherwise. Current use of contraception, therefore, includes use of either modern, traditional, or folkloric methods.

Pregnancy. Pregnancy is a binary variable coded "yes" if a woman has experienced any pregnancy ending in a live birth in the 5 years prior to the survey or is currently pregnant, and "no" if otherwise. While experiencing pregnancy, in and of itself, is neither a positive nor negative health outcome, it may indicate differential needs for reproductive health services if it varies with disability status.

Unintended Pregnancy. Unintended pregnancy is calculated in a similar manner. It is coded as "yes" for women who experienced a pregnancy ending in a live birth in the past 5 years or are currently pregnant but indicate that the pregnancy was mistimed or unwanted, and "no" for women who either did not experience a pregnancy in the past 5 years or who experienced a pregnancy and wanted a child at the time they became pregnant. Unlike any pregnancy, unintended pregnancy is clearly an undesirable health outcome.

3   RESULTS

3.1   Sample Description

3.1.1   Profile of the analytic sample

Table 1 shows the basic background characteristics of the analytic samples for the nine study countries. It reveals that the samples are relatively young, with women age 45–49 being the smallest age group in all countries. Level of completed education varies, with women most commonly having no education in Mali and Senegal, primary education in Rwanda and Uganda, and secondary or higher in Haiti, Nigeria, South Africa, and Timor-Leste. Education follows a bimodal distribution in Pakistan with high proportions of women having no education (49%) and secondary or higher education (34%).

In Haiti and Rwanda, women are roughly evenly divided between being currently married and currently not married. Two-thirds or more are married in another seven countries, with this figure rising to 82% in Mali and 96% in Pakistan. (Note that Pakistan is an ever-married women sample.) In contrast to this general pattern, the majority of women (64%) are unmarried in South Africa. The study countries represent a diverse set of fertility regimes, with a plurality of women in seven countries having fewer than one birth (Haiti, Nigeria, Rwanda, Senegal, South Africa, Timor-Leste, and Uganda) but more than four births in Mali and Pakistan.

Table 1   Description of analytic samples

	Haiti 2016–17 (N = 15,393)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)[1]		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n
Age																		
15–24	39.1	6,012	38.0	4,000	36.6	15,284	20.1	2,489	38.8	5,672	39.8	3,742	33.4	2,842	40.8	5,149	43.7	8,086
25–34	27.8	4,274	34.4	3,615	32.1	13,433	40.1	4,961	28.6	4,191	31.6	2,977	32.6	2,777	30.0	3,783	30.2	5,595
35–44	19.0	2,921	21.7	2,277	22.5	9,403	29.1	3,599	24.3	3,560	21.5	2,022	23.6	2,013	20.5	2,579	19.6	3,619
45–49	14.2	2,186	6.0	627	8.9	3701	10.6	1,316	8.3	1,211	7.2	673	10.4	883	8.7	1,096	6.5	1,207
Highest level of education completed																		
None	16.8	2,583	65.5	6,892	34.9	14,603	49.2	6,080	9.4	1,377	45.7	4,304	2.0	168	21.7	2,741	9.6	1,781
Primary	29.8	4,593	13.2	1,388	14.4	6,039	16.5	2,037	58.3	8,529	22.0	2,070	9.1	774	15.2	1,922	57.4	10,630
Secondary or higher	53.4	8,217	21.3	2,239	50.6	21,180	34.4	4,247	32.3	4,728	32.3	3,040	88.9	7,571	63.0	7,944	32.9	6,095
Household wealth index																		
Poorest	15.5	2,379	17.6	1,846	17.3	7,222	18.3	2,258	18.7	2,741	16.0	1,508	19.4	1,648	16.5	2,085	17.5	3,247
Poorer	17.4	2,677	18.8	1,981	19.2	8,045	19.7	2,430	18.8	2,756	17.6	1,659	20.2	1,715	18.1	2,287	18.4	3,397
Middle	19.3	2,968	19.1	2,011	19.6	8,207	20.3	2,504	18.8	2,757	20.3	1,908	21.2	1,805	19.2	2,423	18.7	3,460
Richer	23.2	3,574	21.1	2,217	21.5	8,990	21.0	2,594	20.3	2,966	21.9	2,065	20.7	1,763	22.0	2,771	19.9	3,683
Richest	24.7	3,795	23.4	2,465	22.4	9,357	20.9	2,579	23.3	3,414	24.1	2,273	18.6	1,583	24.1	3,041	25.5	4,720
Current marital status																		
Never or formerly married	48.5	6,969	18.6	1,952	30.4	12,731	4.3	533	49.4	7233	36.1	3401	64.2	5,464	38.9	4,910	39.4	7,283
Currently married	51.5	7,402	81.5	8,567	69.6	29,090	95.7	11,831	50.6	7,401	63.9	6,013	35.8	3,050	61.1	7,697	60.7	11,223
Parity																		
0–1	57.5	8,261	33.8	3,558	39.7	16,593	27.1	3,349	49.4	7,230	50.2	4,722	52.0	4,430	50.6	6,376	39.3	7,266
2–3	23.1	3,318	23.2	2,442	22.5	9,390	30.3	3,750	25.3	3,704	21.3	2,007	37.2	3,168	20.1	2,528	22.9	4,245
4 or more	19.4	2,792	43.0	4,519	37.9	15,838	42.6	5,265	25.3	3,700	28.5	2,685	10.8	916	29.4	3,702	37.8	6,995

[1] Pakistan is an ever-married women sample.

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3.1.2 Prevalence of disabilities in the analytic sample

Table 2 presents the description of the analytic samples of women age 15–49 in the nine study countries. The prevalence of disabilities is generally low, ranging from half a percent in Timor-Leste to nearly 5% in Pakistan and Uganda. Vision disabilities are typically the most common disability followed by either cognitive or hearing disabilities. In Mali and Senegal, cognitive disabilities are more commonly reported than vision disabilities.

Table 2   Prevalence of disability among women age 15–49

	Haiti 2016–17 (N = 15,393)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n
Any disability	2.4	373	2.9	302	1.2	484	4.8	592	4.4	637	3.5	330	2.8	242	0.5	64	4.8	890
Vision disability	1.0	151	0.3	34	0.1	54	1.6	202	1.8	266	0.9	87	1.2	105	0.1	17	1.4	250
Cognitive disability	0.6	99	2.0	214	0.9	374	0.8	93	1.2	180	2.2	206	0.3	28	0.1	11	1.6	286
Hearing disability	0.6	86	0.1	12	0.1	21	0.7	83	0.7	108	0.1	12	0.6	49	0.1	14	1.4	255
Speech/communication disability	0.4	67	0.4	42	0.1	41	2.4	297	0.9	128	0.3	27	0.9	75	0.2	23	1.1	210
Self-care disability	0.2	25	0.1	7	0.1	25	0.4	45	0.2	22	0.1	6	0.2	12	0.1	7	0.1	26
Mobility disability	0.0	6	0.0	3	0.1	29	0.1	7	0.1	12	0.0	4	0.1	9	0.1	6	0.1	20

Note: The presence of a disability is measured as "a lot of difficulty" or "cannot do at all" in the functional domain.

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3.1.3 Prevalence of outcomes in the analytic sample

Many of the outcomes do not share a common pattern across study countries (Table 3). This reflects the diversity of settings included in our study. For example, in four countries—Mali, Nigeria, Senegal, and Timor-Leste—a plurality of women in the analytic sample want to have a(nother) child within 2 years, while in Haiti and Uganda a plurality want to wait at least 2 years, and in Pakistan and South Africa want no more or are sterilized or infecund. In Rwanda, the proportion wanting no more and to wait 2 years or more is about equal (37%).

The ideal number of children is low in South Africa (2.6) and Haiti (2.8) but reaches a high of about six children in the two West African countries—Mali and Nigeria. Less than half the women in most study countries have had sex in the past month, however this ranges from a low of 42% in Timor-Leste to seven in ten women (73%) in Pakistan.

Problems seeking medical advice or treatment is substantial in all countries except South Africa. This figure ranges from 18% (South Africa) to 79% (Haiti), with most countries in the 47–59% range. Getting money and distance to the health facility are the two most common problems. Getting permission to go is a sizable problem in Mali, Pakistan, and Timor-Leste, but generally a rare problem elsewhere.

The percentage of women (among those with a birth in the last 5 years) who attended four or more antenatal care visits ranges from 42% (Nigeria) to 77% (Timor-Leste), while the percentage having a facility delivery ranges from 41% (also Nigeria) to 96% (South Africa). While these two indicators usually move together, there are some interesting instances of gaps between them (for example, Rwanda).

Women in study countries typically know of 7–8 contraceptive methods, but only 4.5 on average in Timor-Leste and as many as 9.7 in Uganda. Contraceptive prevalence ranges from 14% in Nigeria to 48% in South Africa. These figures refer to all women age 15–49, regardless of marital status, except in Pakistan, which sampled ever-married women and is almost exclusively composed of currently married women.

The prevalence of having experienced pregnancy in the past 5 years ranges from 32–36% in Haiti and South Africa to a high of 55–63% in Uganda and Mali. The prevalence of unintended pregnancy ranges from a low of 13–16% in these same countries to a high of 47–53% in Pakistan and Mali.

Table 3   Prevalence of outcomes

	Haiti 2016–17 (N = 15,393)[1]		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n	Percent	n
Fertility desires[2]																		
Want to have a(nother) child within 2 years	18.9	2,720	49.9	5,250	54.2	22,675	37.3	4,433	25.9	3,786	56.6	5,325	35.9	3,052	64.8	8,173	25.9	4,793
Want to wait 2+ years to have another child	42.2	6,063	28.0	2,948	23.3	9,723	15.8	1,875	36.9	5,394	28.3	2,667	13.7	1,162	13.5	1,698	40.1	7,414
Want no more/sterilized/infecund	38.9	5,587	22.1	2,319	22.5	9,422	47.0	5,582	37.3	5,453	15.1	1,422	50.5	4,300	21.7	2,736	34.0	6,299
Ideal number of children (mean)	2.8	14,271	6.0	10,519	6.1	41,821	3.9	12,364	3.5	14,634	5.4	9,414	2.6	8,514	3.7	12,607	4.8	18,506
Recency of sex[2]																		
Had sex in past month	45.7	6,560	65.6	6,905	58.1	24,281	72.9	8,653	47.7	6,982	45.0	4,237	49.2	4,185	41.8	5,270	51.3	9,501
Big problem seeking medical treatment for self	78.7	12,111	47.3	4,976	51.5	21,547	66.9	8,269	48.6	7,115	51.5	4,847	17.8	1,514	59.5	7,498	58.6	10,841
Getting money needed for treatment	73.3	11,287	40.5	4,259	45.8	19,163	30.4	3,762	40.2	5,882	43.0	4,047	25.8	2,194	37.8	4,762	44.7	8,267
Distance to health facility	38.1	5,864	28.5	2,996	25.7	10,756	42.0	5,195	21.2	3,102	20.8	1,961	22.5	1,915	46.0	5,805	37.4	6,915
Not wanting to go alone	20.4	3,146	20.1	2,110	16.1	6,726	58.3	7,209	14.1	2,061	13.3	1,255	12.5	1,066	40.8	5,146	20.9	3,873
Getting permission to go	9.3	1,425	27.1	2,847	11.4	4,762	21.2	2,622	3.9	565	12.2	1,147	12.8	1,088	34.5	4,347	5.4	999
Attended 4+ ANC visits[3]	66.6	3,257	43.3	2,865	41.5	9,097	51.4	3,453	47.2	2,975	58.5	2,547	75.5	2,292	76.7	3,837	59.9	6,080
Facility delivery[3]	42.1	2,057	69.9	4,629	41.1	9,015	68.8	4,618	93.4	5,885	84.0	3,655	96.1	2,917	50.7	2,533	75.2	7,636
Number of contraceptive methods known (mean)	7.4	15,393	7.7	10,519	7.0	41,821	7.4	12,364	10.6	14,634	7.1	9,414	8.0	8,514	4.5	12,607	9.7	18,506
Current use of contraception (any method)	24.1	3,708	16.2	1,701	14.3	5,980	33.1	4,094	38.6	5,649	19.4	1,828	48.2	4,099	16.1	2,025	30.3	5,602
Pregnancy in past 5 years	31.8	4,890	63.0	6,623	52.4	21,910	54.3	6,711	43.1	6,301	46.0	4,332	35.7	3,036	39.6	4,991	54.9	10,152
Unintended pregnancy in past 5 years	13.1	2,012	52.9	5,568	46.0	19,250	46.7	5,777	24.8	3,635	39.1	3,684	16.1	1,367	37.1	4,673	30.3	5,604

[1] In Haiti, data on several variables are omitted for 1,142 women sampled only for the Non-Communicable Disease module. These variables are fertility desires, recency of sex, and current contraceptive use.
[2] In Pakistan, data on fertility desires and recency of sex were collected only from currently married women. This survey is a sample of ever-married women.
[3] For the most recent birth among women with a birth in the past 5 years

3.2 Fertility Ideation and Sex Behavior

3.2.1 Fertility desires

Fertility desires regarding future children are measured at the time of the survey. In seven of the nine study countries, women with disabilities are significantly less likely to want a child within 2 years, as compared to women without disabilities (Table 4). Differences are largest in Timor-Leste where the two groups of women are separated by 20 points. Differences are smallest (5 points) in Rwanda, and there are no differences in Haiti or Senegal.

Table 4 Percent distribution of current fertility desires, by disability status

	Desire to have a(nother) child within 2 years		
	% among women with disabilities	% among women with no disabilities	χ² *p* value
Haiti	17.0	19.4	.270
Mali	44.2	50.9	.000
Nigeria	46.4	54.5	.000
Pakistan	25.0	41.8	.000
Rwanda	22.1	26.8	.000
Senegal	56.4	56.6	.938
South Africa	28.7	37.1	.000
Timor-Leste	46.9	67.2	.000
Uganda	20.6	27.8	.000

These results are largely confirmed in the multivariable analysis (Figure 3). In no country other than Rwanda do women with disabilities want to have a child within the next 2 years to a greater extent than women without disabilities do. In Pakistan (*OR* = 0.81, *p* = .005) and Timor-Leste (*OR* = 0.94, *p* = .008), women with disabilities have significantly lower odds of wanting a child soon. However, women with disabilities in Rwanda have 10% higher odds of wanting a child in the next 2 years. Full model details are presented in Appendix Table A1.

Figure 3 Association of having a disability with wanting a(nother) child within 2 years. Odds ratios from separate multivariable logistic regressions
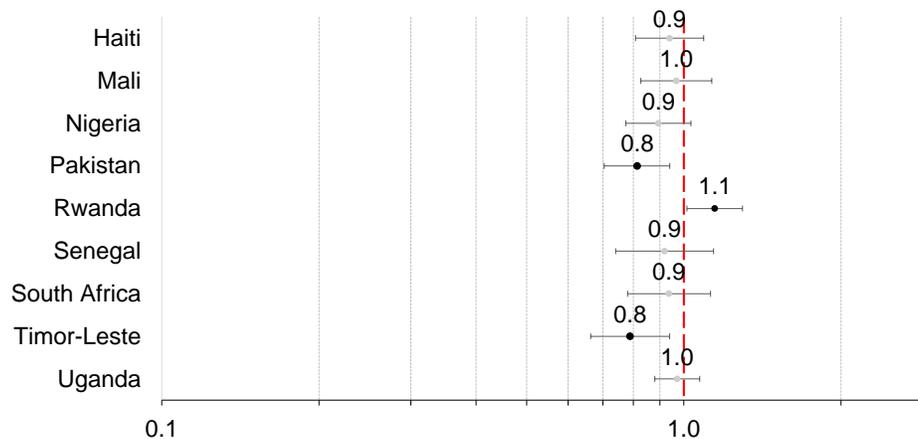
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.2.2 Ideal number of children

The ideal number of children reflects women's hypothetical ideal, regardless of the number of children she may currently have. We find significant differences in ideal number of children in all study countries, albeit generally small to moderate ones (Table 5). For example, a difference of 0.09 children is detected to be statistically significant in Mali.

Table 5   Mean ideal number of children by disability status

	Women with disability	Women with no disability	*p* value
Haiti	2.93	2.77	.000
Mali	6.05	5.96	.000
Nigeria	5.75	6.10	.000
Pakistan	3.72	4.01	.000
Rwanda	3.73	3.43	.000
Senegal	5.03	5.48	.000
South Africa	2.73	2.57	.000
Timor-Leste	4.19	3.69	.000
Uganda	5.18	4.65	.000

Differences are also inconsistent in direction. Women with disabilities prefer more children (0.09 to 0.53 more) in six countries: Haiti, Mali, Rwanda, South Africa, Timor-Leste, and Uganda, but fewer children (0.29 to 0.45 fewer) in three countries: Nigeria, Pakistan, and Senegal.

Figure 4 presents the results of multivariable analysis and indicates that, after controlling for other factors, only one country (Pakistan) shows significant differences by disability status. In Pakistan, women with disabilities prefer 0.3 fewer children as their ideal compared with women without disabilities. See Appendix Table A2 for results of the full models.

Figure 4   Association of having a disability with ideal number of children. Coefficients from separate multivariable linear regressions
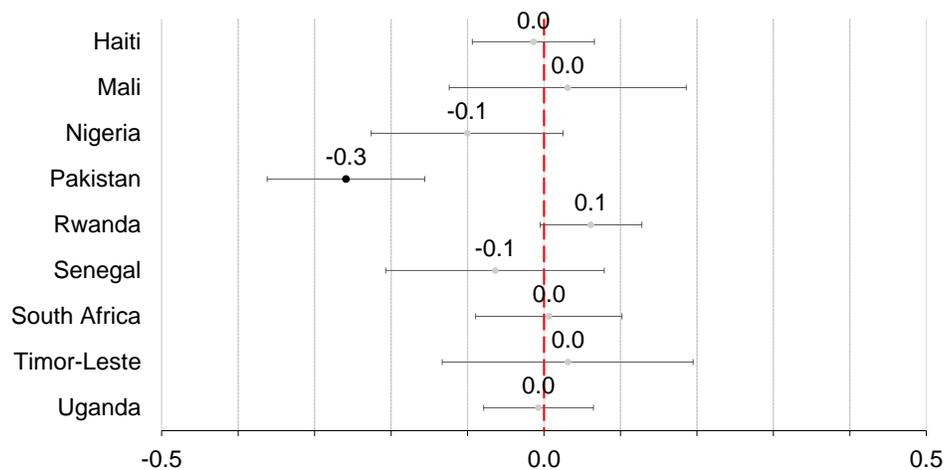
3.2.3 Recency of sex

Compared to women without disabilities, women with disabilities are significantly more likely to have had sex in the last month in Haiti (49% versus 45%), Rwanda (53% versus 47%), Timor-Leste (51% versus 41%), and Uganda (53% vs 51%) (Table 6). However, in Nigeria, Pakistan, and Senegal, women with disabilities are significantly less likely to have had sex in the last month as compared to women without disabilities. Further, the differences are not significant in either Mali or South Africa.

Table 6   Percent distribution of sex in the last month, by disability status

	% among women with a disability	% among women with no disability	χ² *p* value
Haiti	48.5	45.0	.008
Mali	65.1	65.7	.706
Nigeria	53.6	58.3	.001
Pakistan	69.0	74.2	.000
Rwanda	52.5	46.5	.000
Senegal	39.0	45.8	.010
South Africa	49.3	49.1	.926
Timor-Leste	50.6	40.7	.000
Uganda	53.3	50.6	.003

The results of the multivariable analysis in Figure 5 are similar (see Appendix Table A3 for details). Women with disabilities in Haiti, Mali, Rwanda, and Senegal have significantly lower odds of sex in the last month, but not so for women with disabilities in Mali, Nigeria, and Pakistan. These associations are no longer significant when controlling for other factors. When controlling for other factors, there are no countries where women with disabilities are significantly associated with higher odds of having had sex in the last month.

Figure 5   Association of having a disability with having had sex in the past month. Odds ratios from separate multivariable logistic regressions
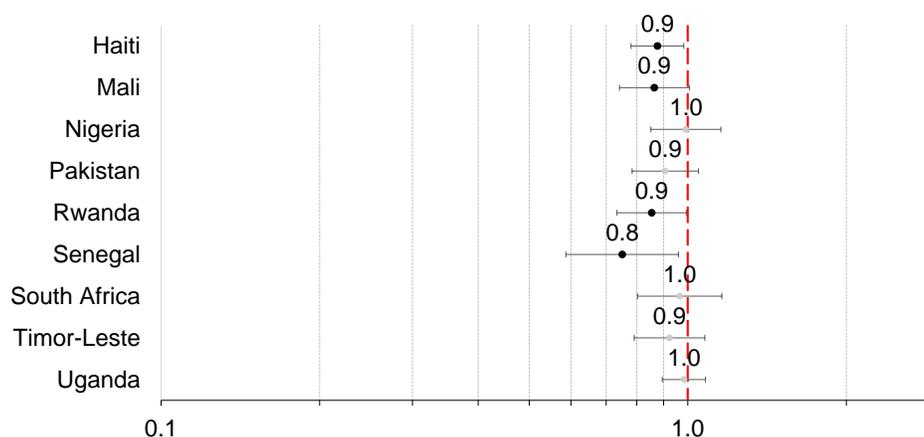
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.3 Health Care Access and Use

3.3.1 Difficulty accessing health services

In four countries (Rwanda, Senegal, South Africa, and Uganda), women with disabilities experience significantly more difficulties accessing health services than those without disabilities (Table 7). These differences are largest in Uganda, with a near 11-point difference. In one country, Pakistan, women with disabilities are less likely to experience these difficulties by a difference of 12 percentage points. Differences in this direction approach significance in Timor-Leste.

Table 7   Percent distribution of experiencing a big problem to getting medical help, by disability status

	% among women with a disability	% among women with no disability	χ^2 *p* value
Haiti	78.7	78.7	.990
Mali	45.1	47.7	.155
Nigeria	49.3	51.6	.113
Pakistan	58.2	70.2	.000
Rwanda	55.1	47.0	.000
Senegal	54.2	51.1	.305
South Africa	22.1	17.1	.001
Timor-Leste	56.0	59.9	.056
Uganda	66.5	55.8	.000

Accounting for other factors in multivariable analyses shown in Figure 6, women with disabilities continue to have higher odds (approximately 1.3–1.5 times higher odds ($p < .001 – p = .007$)) of experiencing difficulties accessing services in Rwanda, Senegal, South Africa, and Uganda. Women with disabilities in Pakistan have 14% lower odds of difficulty accessing services ($OR = 0.9$, $p = .026$). See Appendix Table A4 for details.

Figure 6   Association of having a disability with experiencing big problems seeking medical advice or treatment when sick. Odds ratios from separate multivariable logistic regressions
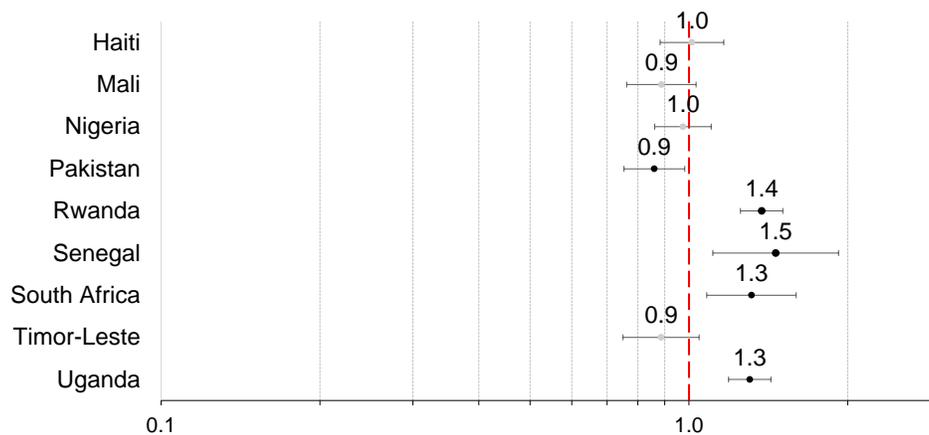
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.3.2 Specific difficulties accessing health services

The most common difficulty accessing services in most countries for women with disabilities is getting money for treatment, with between one-third (South Africa) and nearly three-fourths (Haiti) of women with disabilities reporting this (Table 8). Pakistan is the exception where distance and not wanting to go alone surpass cost as the most common difficulties accessing services.

Table 8   Percent distribution of specific problems getting medical help, by disability status

	% among women with a disability	% among women with no disability	χ² *p* value
Getting money for treatment is a big problem			
Haiti	73.2	73.3	.916
Mali	38.5	40.8	.173
Nigeria	44.4	45.9	.298
Pakistan	28.4	31.2	.047
Rwanda	46.4	38.7	.000
Senegal	45.3	42.7	.328
South Africa	33.4	24.5	.000
Timor-Leste	35.7	38.0	.200
Uganda	52.1	42.1	.000
Distance to facility is a big problem			
Haiti	39.1	37.8	.311
Mali	25.1	29.1	.016
Nigeria	23.2	25.8	.054
Pakistan	35.7	44.4	.000
Rwanda	24.3	20.4	.000
Senegal	19.6	21.0	.663
South Africa	26.3	21.8	.039
Timor-Leste	42.6	46.5	.069
Uganda	44.8	34.7	.000
Not wanting to go alone is a big problem			
Haiti	22.1	20.0	.019
Mali	16.8	20.6	.010
Nigeria	13.5	16.2	.008
Pakistan	47.6	62.4	.000
Rwanda	17.3	13.3	.000
Senegal	14.5	13.2	.363
South Africa	13.1	12.4	.705
Timor-Leste	37.7	41.2	.054
Uganda	26.4	19.0	.000
Getting permission to go is a big problem			
Haiti	8.9	9.4	.526
Mali	24.7	27.5	.080
Nigeria	9.1	11.5	.008
Pakistan	17.5	22.6	.000
Rwanda	4.7	3.7	.016
Senegal	8.6	12.6	.035
South Africa	13.2	12.7	.768
Timor-Leste	32.3	34.8	.167
Uganda	6.4	5.0	.001

Getting money for treatment is also the most common difficulty—at similar levels—for women without disabilities in all countries except Pakistan, where distance and not wanting to go alone are more common.

Despite these similarities, there are statistically significant differences between groups in several places (Table 8). In several countries, women with disabilities are more likely to face multiple problems. Getting money for treatment and distance to the facility are significantly more likely problems for women with disabilities in Rwanda, South Africa, and Uganda. Additionally, not wanting to go alone and getting permission to go are also significantly more likely problems for women with disabilities in Rwanda and Uganda. Not wanting to go alone is also a more common problem for women with disabilities in Haiti. On the other hand, getting money for treatment is a significantly less likely problem for women with disabilities

in Pakistan as is distance to the facility in Mali and Pakistan, and getting permission to go in Nigeria, Pakistan, and Senegal. These findings suggest that disadvantage in access to services for women with disabilities (and women without disabilities in Pakistan) is not due to one specific problem, but the cumulative effect of disadvantage in several problems accessing services.

3.3.3 Antenatal care

In only three countries is coverage of four or more ANC visits significantly different between women with and without disabilities. In Mali and Pakistan, women with disabilities are more likely to have attended four or more ANC visits during their most recent pregnancy. This difference is substantial in Pakistan where 58% of women with disabilities attended these services compared with 50% of women with no disabilities, a difference of 8 percentage points. In South Africa we observe the opposing pattern: women with disabilities are significantly less likely to attend four or more ANC visits, with a difference of 6.5 percentage points.

Table 9   **Percent distribution of attending at least four antenatal visits for most recent birth, among women with a birth in the past 5 years, by disability status**

	% among women with a disability	% among women with no disability	χ² *p* value
Haiti	68.5	66.3	.546
Mali	44.8	43.0	.093
Nigeria	59.4	56.8	.480
Pakistan	58.1	49.9	.001
Rwanda	46.7	47.3	.837
Senegal	60.5	58.3	.039
South Africa	69.7	76.2	.017
Timor-Leste	77.6	76.7	.848
Uganda	59.9	59.9	.945

After controlling for other factors, these differences lose significance in these three countries (Figure 7). However, disability emerges as a significant factor in Uganda, where women with disability have 10% higher odds of four or more ANC visits compared with their counterparts without disabilities (*OR*: 1.1, *p* = .035). See Appendix Table A5 for full model details.

Figure 7   Association of having a disability with at least four antenatal visits for most recent birth, among women with a birth in the past 5 years. Odds ratios from separate multivariable logistic regressions
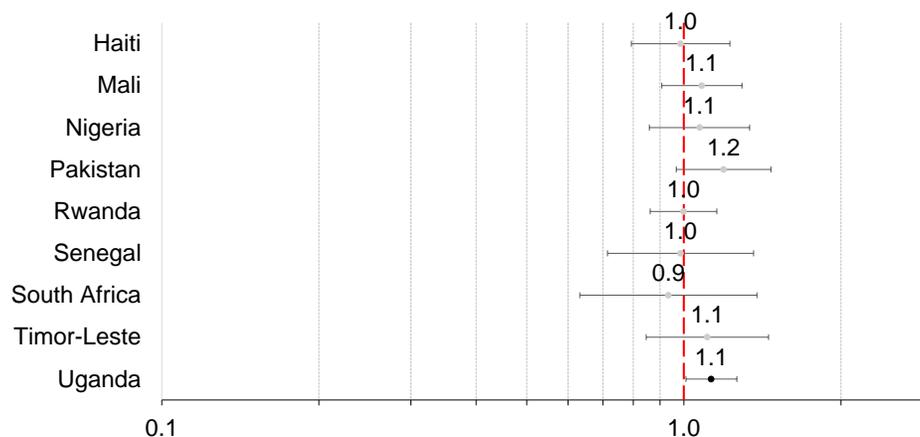

Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.3.4   Facility delivery

Only two countries show significant differences in facility delivery. Disabled women in South Africa and Uganda are significantly less likely to have delivered their most recent child in a health facility (Table 10). These differences are not small, 4 and 8 percentage points, respectively.

Table 10   Percent distribution of facility delivery, among women with a birth in the past 5 years, by disability status

	% among women with a disability	% among women with no disability	χ^2 *p* value
Haiti	44.1	41.7	.294
Mali	68.6	70.1	.525
Nigeria	42.9	41.1	.415
Pakistan	70.0	68.5	.448
Rwanda	92.4	93.6	.125
Senegal	86.2	83.8	.331
South Africa	92.4	96.5	.003
Timor-Leste	48.6	51.0	.498
Uganda	69.1	77.2	.000

However, these differences dissipate once controlling for other factors (Figure 8) (see Appendix Table A6 for full model details). This suggests that it is not their disability status per se, but other factors that explain the lower levels of facility delivery coverage among women with disabilities. Typically, age, parity, education, and wealth are all independently associated with facility delivery, but not marital or disability status.

Figure 8   Association of having a disability with facility delivery for most recent birth, among women with a birth in the past 3 years. Odds ratios from separate multivariable logistic regressions
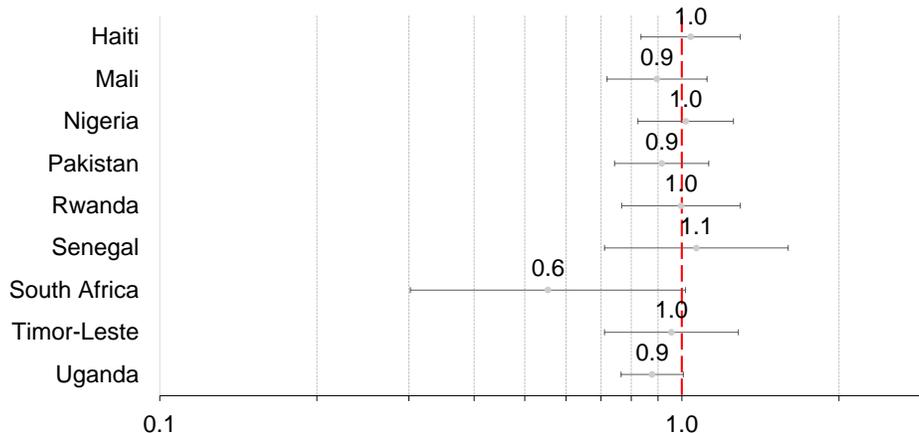
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.4   Contraception and Pregnancy Experience

3.4.1   Contraceptive knowledge

Contraceptive knowledge does typically vary with disability status (Table 11). In seven countries, women with disabilities know of more contraceptive methods than do women with no disabilities. In Haiti, the opposite is true: women with disabilities know of fewer methods. There is no difference in South Africa. However, differences are not large. Women with disabilities on average know of one more method than women without disabilities (average: 0.7; range 0.3–1.1) in the seven countries where they know more methods and 0.8 methods fewer in Haiti.

Table 11   Mean number of contraceptive methods known, by disability status

	Women with disability	Women with no disability	*p* value
Haiti	6.83	7.62	.000
Mali	7.99	7.62	.000
Nigeria	7.91	6.92	.000
Pakistan	7.94	7.23	.000
Rwanda	10.97	10.45	.000
Senegal	8.09	7.02	.000
South Africa	7.93	7.97	.722
Timor-Leste	5.13	4.40	.000
Uganda	9.95	9.67	.000

Given the small differences between groups, it is unsurprising that disability status is not a significant explainer of contraceptive knowledge in multivariable models (Figure 9). Only in Nigeria do disabled women have higher contraceptive knowledge ($\beta = 0.3$, $p = .002$) than non-disabled women after controlling for other variables. Details of the full models can be found in Appendix Table A7.

Figure 9   Association of having a disability with number of contraceptive methods known. Coefficients from separate multivariable regressions
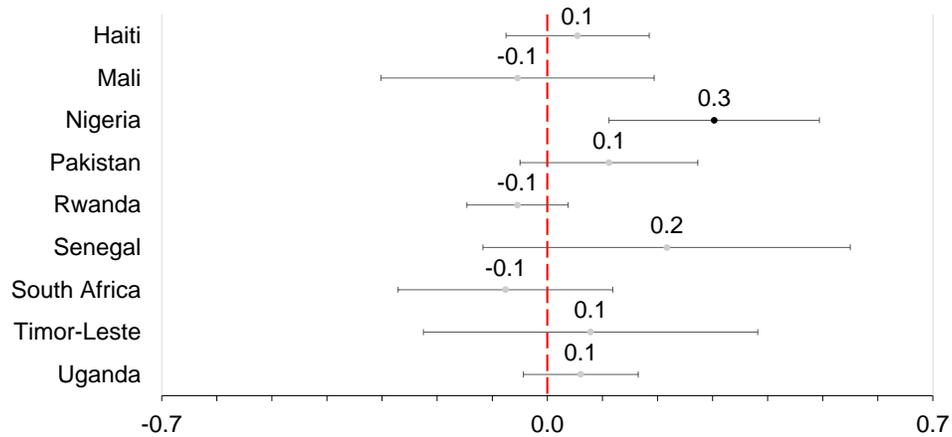
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.4.2   Current use of contraception

Greater use of contraception would signify less exposure to the risk of pregnancy and could explain lower odds of unintended pregnancy. Table 12 shows women with disabilities are significantly more likely to be using any method of contraception compared to those without disabilities in three countries—Mali, Pakistan, and Uganda—while the difference between these groups approaches significance in Senegal and Timor-Leste. The differences are largest in Pakistan (12 points). There are no countries in which women with disabilities are less likely to use contraception.

Table 12   Percent distribution of current contraceptive use (any method), by disability status

	% among women with a disability	% among women with no disability	χ² *p* value
Haiti	25.0	23.9	.353
Mali	18.3	15.8	.049
Nigeria	15.2	14.3	.348
Pakistan	41.7	29.8	.000
Rwanda	41.3	37.9	.005
Senegal	21.9	19.1	.075
South Africa	46.0	48.5	.175
Timor-Leste	18.4	15.8	.077
Uganda	32.4	29.5	.002

These differences remain significant in two of these three countries with the introduction of controls in multivariable models (Figure 10). In Pakistan, women with disabilities have 1.3 times higher odds of currently using contraception as compared with women without disabilities ($p = .001$), while Ugandan women with disabilities have 1.1 higher odds ($p = .014$). Appendix Table A8 presents the details of the complete models.

Figure 10   Association of having a disability with current use of contraception (any method). Odds ratios from separate multivariable logistic regressions
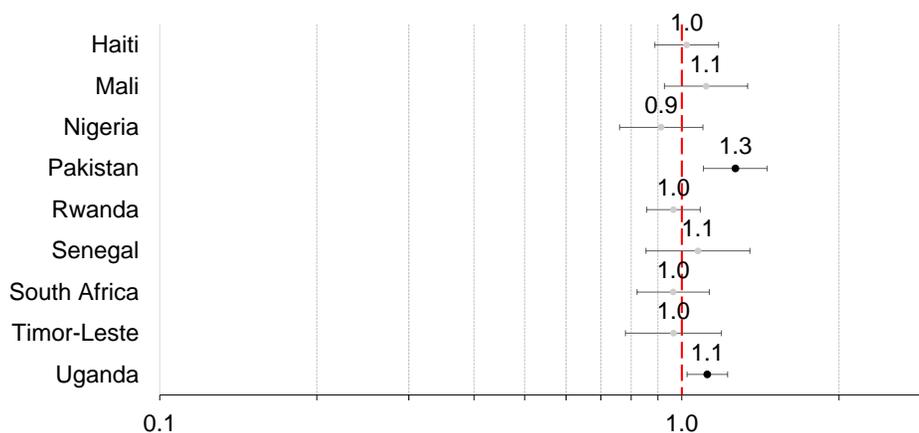
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.4.3   Contraceptive method mix

Although women with disabilities have similar or (in Pakistan and Uganda) greater odds of using contraception compared with women without disabilities, there are interesting patterns in the method mix according to disability status. There are significant differences in the overall method mix based on disability status in every study country but Mali. These differences are highly statistically significant, with *p* values less than .001 in all eight countries.

Figure 11 shows the contribution of each of seven contraceptive methods to overall contraceptive use, that is, the percentage of women currently using each of these methods among women using any contraception. The first in each pair of bars shows the method mix among contracepting women with a disability and the second shows the method mix among contracepting women with no disability. Statistically significant differences in use of the method are indicated by a solid bar whereas no statistical difference is indicated by a cross-hatched bar.

Figure 11   Method mix by disability status. Percent of women currently using each method among women using any contraception

Female sterilization ■ Injectables ■ Implants ■ Pill ■ Male condoms ■ Withdrawal ■ Other ■

Solid = statistically significant difference (*p* < .05) • Pattern = not statistically significant (*p* ≥ .05)
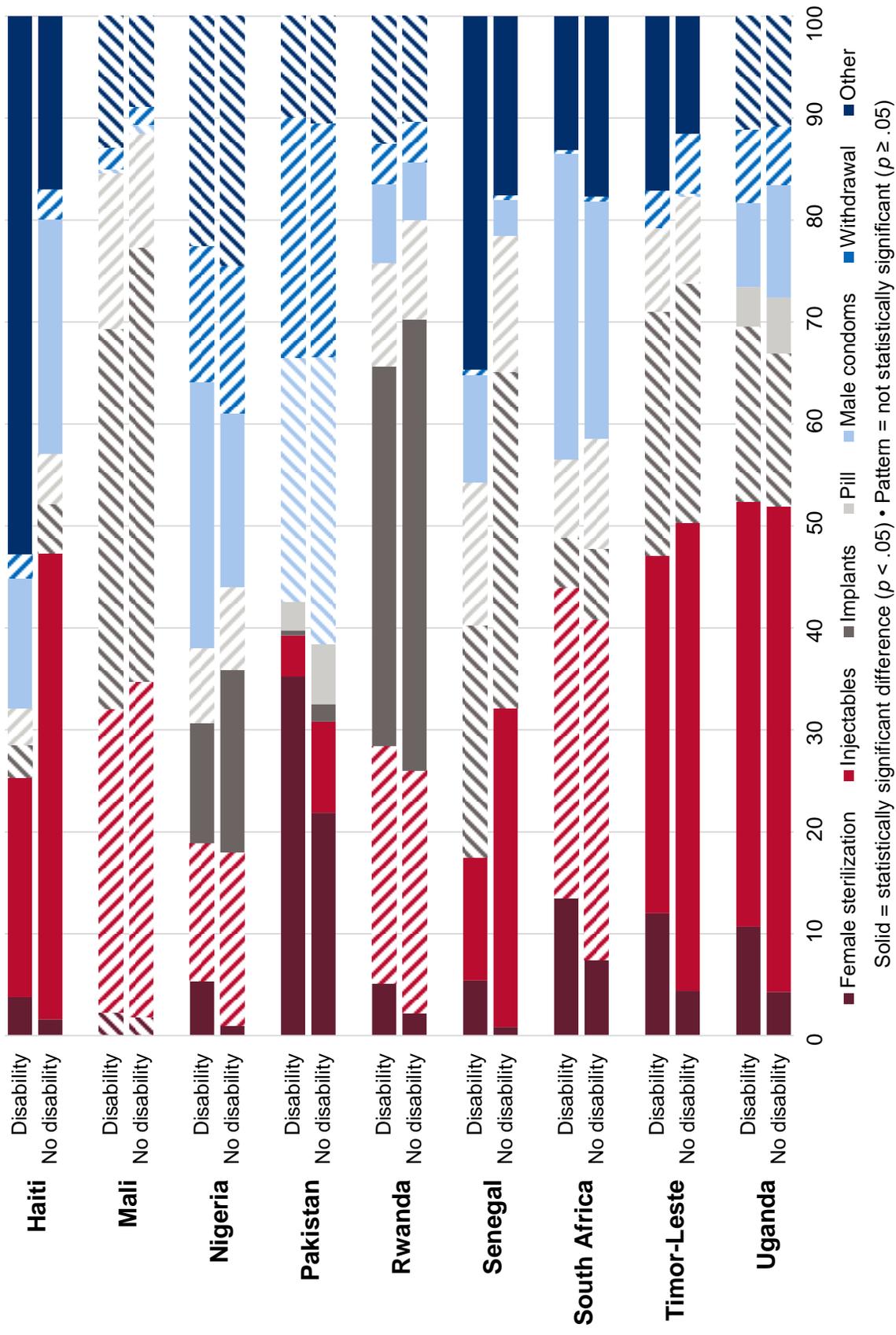
The most consistent differences between women with and without disabilities are in the use of female sterilization, which accounts for a greater share of the method mix among women with disabilities everywhere except Mali. Differences in the use of the remaining methods are survey specific. For example, women with disabilities are less likely than women without disabilities to be using male condoms in Haiti and Uganda, but more likely in Nigeria, Rwanda, Senegal, and South Africa. They are less likely to be using pills in Pakistan and Uganda and less likely to be using implants in Nigeria, Pakistan, and Rwanda, but differences in pill use and implant use are not significant elsewhere. Women with disabilities are frequently less likely to be using injectables, as is the case in Haiti, Pakistan, Senegal, Timor-Leste, and Uganda.

Figure 12 highlights the differences in female sterilization by disability status, the method with the most notable and consistent differences. In every country but Mali, women with disabilities are significantly more likely to be using female sterilization than women without disabilities. This pattern is demonstrated in countries in which sterilization plays a dominant role in the method mix (for example, Pakistan) and where it plays a negligible role (for example, Haiti and Nigeria), alike. On average, female sterilization is six percentage points higher among women with a disability who are using contraception than among women without a disability who are using contraception, with a range from 2 points higher in Haiti to 13 points higher in Pakistan.

Figure 12   Percent of women currently using female sterilization among women using any contraception, by disability status
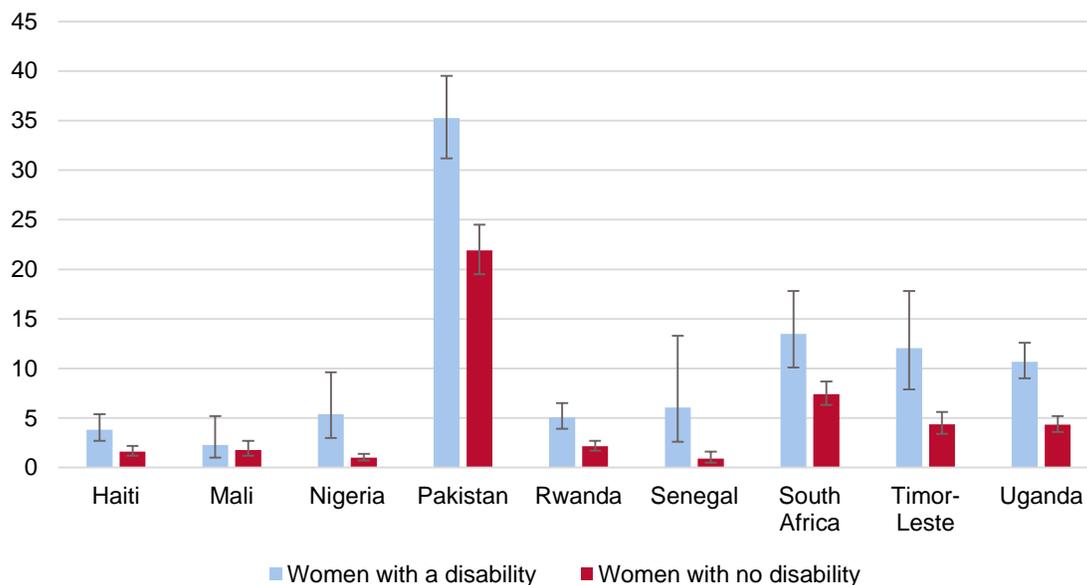
Figure 13 shows the adjusted odds ratios for the use of female sterilization from separate logistic regressions. Women who have a disability in eight countries have unadjusted odds of female sterilization that are between 1.9 times higher (Pakistan and South Africa) and 7 times higher (Senegal) than their counterparts without disabilities (not shown). In multivariable regressions, these odds remain statistically higher (1.4 to 3.8 times higher) in five countries: Haiti, Nigeria, Rwanda, South Africa, and Uganda (see Figure 13).

Figure 13 Association of having a disability with use of female sterilization. Odds ratios from separate multivariable logistic regressions among women currently using contraception

Note: Models control for age, education, household wealth quintile, marital status, and parity.
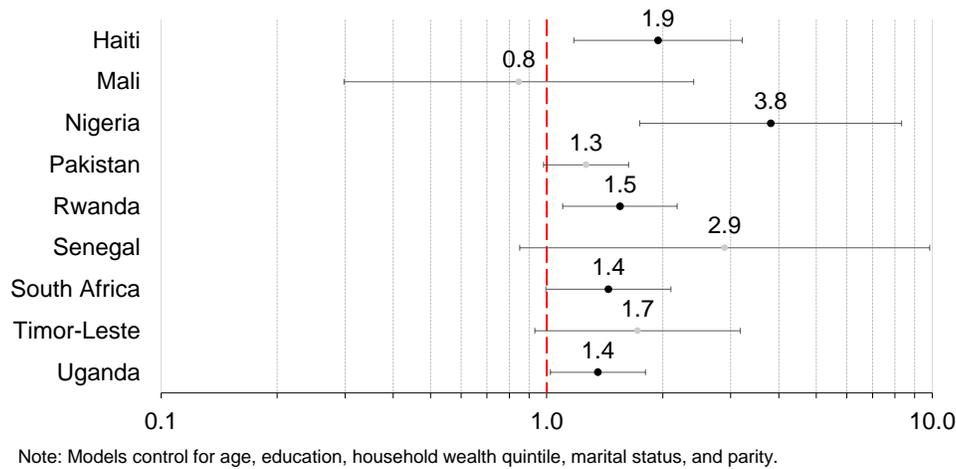
3.4.4 Pregnancy

Table 13 indicates that in all nine study countries women with disabilities are less likely to have experienced a pregnancy in the last 5 years. The difference ranges from 3 percentage points in Rwanda ($p = .032$) to 24 points in Pakistan ($p < .001$).

Table 13 Percent distribution of experience of pregnancy in the last 5 years, by disability status

	% with a pregnancy among women with a disability	% with a pregnancy among women with no disability	χ^2 p value
Haiti	22.3	34.4	.000
Mali	57.6	63.9	.000
Nigeria	34.4	53.3	.000
Pakistan	37.2	60.8	.000
Rwanda	41.1	43.6	.032
Senegal	33.1	47.6	.000
South Africa	27.1	37.1	.000
Timor-Leste	30.9	40.7	.000
Uganda	51.5	56.0	.000

Figure 14 shows the odds ratios from multivariable models and confirms that, controlling for other factors, women with disabilities consistently have lower odds of experiencing any pregnancy than their counterparts without disabilities in all nine countries. Malian women with disabilities have 20% lower odds ($p = .008$) while women with disabilities in Pakistan have 41% lower odds ($p < .001$) of experiencing any pregnancy. Details of the full models are found in Appendix Table A10.

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**Figure 14   Association of having a disability with experience of pregnancy in the past 5 years. Odds ratios from separate multivariable logistic regressions**
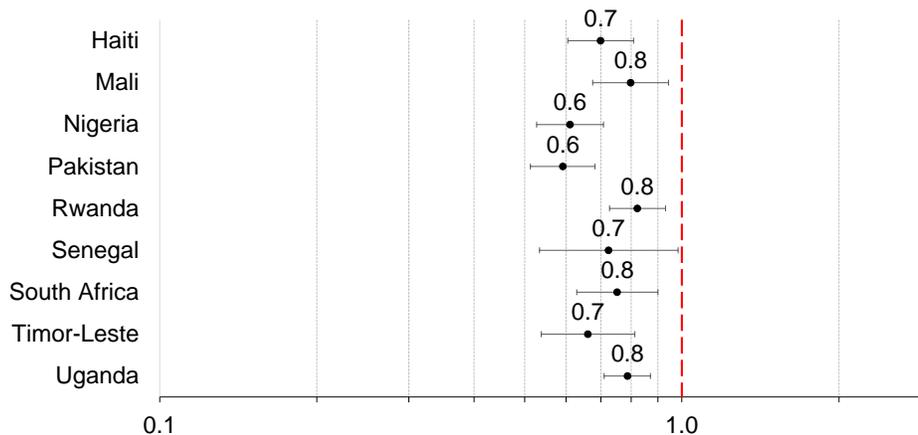
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.4.5   Unintended pregnancy

Table 14 shows the results of bivariate analysis. It indicates that, in all nine study countries, women with a disability are less likely to have experienced an unintended pregnancy in the 5 years preceding the survey than women without a disability. The differences are greatest in Pakistan (23 points), where 30% of women with a disability have experienced unintended pregnancy, compared with 53% of women without a disability. Elsewhere, the difference ranges from 2 percentage points (Rwanda) to 18 percentage points (Nigeria).

Table 14   Percent distribution of experience of unintended pregnancy in the last 5 years, by disability status

	% with an unintended pregnancy among women with a disability	% with an unintended pregnancy among women with no disability	χ² *p* value
Haiti	9.2	14.2	.000
Mali	47.1	53.9	.000
Nigeria	28.8	46.9	.000
Pakistan	29.8	53.2	.000
Rwanda	23.0	25.3	.020
Senegal	26.9	40.6	.000
South Africa	12.0	16.7	.003
Timor-Leste	27.6	38.3	.000
Uganda	24.7	32.3	.000

Figure 15 presents the results of factors associated with unintended pregnancy in the last 5 years from multivariable logistic regression models (see Appendix Table A11 for details). Women with disabilities have reduced odds of experiencing unintended pregnancy, net of other factors. These odds range from 10% lower (Rwanda) to 38% lower (Pakistan) than women without disabilities and are of borderline significance in South Africa (*OR* = 0.78, *p* = .062).

Figure 15   Association of having a disability with experience of unintended pregnancy in the past 5 years. Odds ratios from separate multivariable logistic regressions
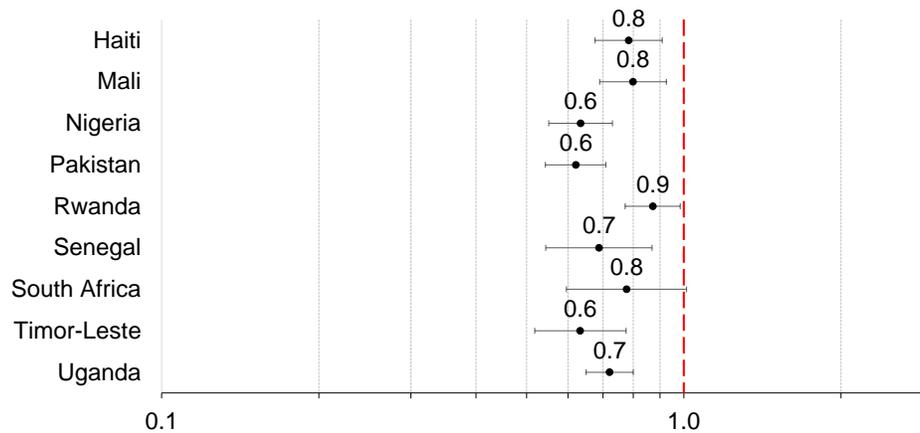
Note: Models control for age, education, household wealth quintile, marital status, and parity.

3.5   Summary of Effects of Disability on Reproductive Health Outcomes

Figure 16 summarizes the findings by country across the intermediary outcomes. Yellow shaded cells indicate significant results in which having a disability is positively associated with the outcome while blue shaded cells indicate a significant negative association. The size of the yellow or blue circle indicates the strength of the association, as indicated by the *p* value. Grey cells indicate no association is detected.

Figure 16   Summary of associations between having a disability and study outcomes

	Want a child within 2 years	Ideal number of children	Had sex in past month	Problems seeking medical advice	4+ ANC visits	Facility delivery	Number of contraceptive methods known	Current use of contraception	Any pregnancy in past 5 years	Unintended pregnancy in past 5 years
Haiti			●						●	●
Mali			●						●	●
Nigeria							○		●	●
Pakistan	●	●		●				○	●	●
Rwanda				○					●	●
Senegal			●	○					●	●
South Africa				○					●	●
Timor Leste	●								●	●
Uganda				○	○			○	●	●

Having a disability is...

...significantly, positively associated with outcome at
...significantly, negatively associated with outcome at
...not associated with outcome

○	●	p < .001
○	●	p < .01
○	●	p < .05

As Figure 16 shows, the only outcomes with which having a disability are consistently associated across all nine countries are pregnancy and unintended pregnancy. This is a consistent negative association, and generally quite strong. Disability status is next most often associated with problems seeking medical advice and having had sex in the last month. For problems seeking medical advice or treatment when sick, this is usually a positive association, though Pakistan is an outlier in manifesting a negative association. Recency of sex is typically a weaker association.

There is no association between disability status and facility delivery in any of the study countries, and associations with antenatal care are also typically absent. Disability status is more sporadically associated with the remaining outcomes: wanting a(nother) child within 2 years, ideal number of children, contraceptive knowledge, and contraceptive use.

Having a disability is associated with the greatest number of outcomes in Pakistan, followed by Uganda. Elsewhere, disability status is associated with just a few outcomes. In Pakistan, having a disability is negatively associated with wanting a child soon, ideal number of children, problems seeking medical advice, unintended pregnancy and pregnancy, but positively associated with contraceptive use. In Uganda, women with disabilities have greater odds of experiencing problems seeking medical advice or treatment,

attending four or more antenatal care visits, and current contraceptive use, but are negatively associated with the two pregnancy outcomes.

In summary, there is not compelling evidence of widespread, consistent disadvantage for women with disabilities, nor for consistent advantage. Women with disabilities are more advantaged in avoiding unintended pregnancies and generally more disadvantaged regarding problems seeking medical services. Women with disabilities are equally advantaged with women without disabilities in terms of maternal health outcomes. Beyond these two outcomes, the relevance of disability status for other outcomes is more idiosyncratic.

4   DISCUSSION

The literature on the reproductive health of women with disabilities in LMICs portrays grim prospects for health service access and reproductive health outcomes; most studies do not include a comparison group but assume the situation for women with disabilities is especially perilous. Our study reveals a different, more equivocal scenario. While outcomes may not be good in general, we do not see systematic disadvantages or uniformly poorer outcomes for women with disabilities across all countries, for all outcomes. Rather, we find consistent differentials by disability status to be limited to a few, selected outcomes. For other outcomes, we detect only sporadic differentials across countries.

Where we find associations, they do not always indicate worse outcomes. Women with disabilities have consistently lower odds of experiencing *unintended* pregnancy in the last 5 years. Additionally, women with disabilities are typically no different than other women with regard to their use of maternal health services. We also find that women with disabilities have consistently lower odds of experiencing any pregnancy in the last 5 years, a neutral outcome. On the other hand, in several study countries we find that women with disabilities are more likely to face difficulties accessing medical services when sick. We also find that women with disabilities rely on female sterilization as their method of contraception more than women without disabilities.

In this study, we found that fertility intentions largely do not differ with disability status: Women with disabilities are significantly less likely to want a child soon in two countries (Pakistan and Timor-Leste) and hold a lower ideal number of children in just one (Pakistan). These findings are consistent with a single study we found indicating that women with disabilities in Sierra Leone were as likely as women without disabilities to desire a(nother) child (Trani et al. 2011). While one study in the U.S. found similar fertility intentions among women with and without disabilities (Bloom et al. 2017), another found that women with disabilities who already have a child have more of a mismatch between *wanting* and *intending* to have another child than women with disabilities. That study appears not to have included a time horizon on *intending*, which makes comparison with our indicators difficult.

We also find limited evidence of less recent sex among women with disabilities in three countries, with no differences elsewhere. This is comparable with mixed findings in the literature in general: similar rates of sexual activity regardless of disability status in seven of the United States (Haynes et al. 2018); lower likelihood of being sexually active for adolescent girls with intellectual disabilities in Portugal (Nunes et al. 2017), and higher likelihood of having had intercourse for adolescent girls with disabilities in Oregon (Senders and Horner-Johnson 2022). In the absence of a comparison group, other studies found substantial rates of sexual activity among women with disabilities, in particular among youth in Ethiopia (Alemu and Fantahun 2011; Kassa et al. 2014), adult women in Sierra Leone (Trani et al. 2011), and blind and deaf adult women in Ethiopia (Yimer and Modiba 2019). Nonetheless, a scoping review in LMICs decries the lack of attention to disability and sexuality, indicating this is an area for continued research (Carew et al. 2017).

Our finding that there was largely no difference in use of maternal health services is consistent with a study in five districts of Sierra Leone that also found no difference in maternal health services (Trani et al. 2011), another study in South India (Murthy et al. 2014), and a third study in Uganda (Mac-Seing et al. 2022).

Concern that women with disability may not have equal access to health services is partially affirmed in this study. Women with disabilities have more problems accessing services in several countries, but this is not universal. Further, problems getting to a service site is only one measure of barriers to access. Women with disabilities may experience fewer services or lower quality care upon arrival at the clinic door (experiences we do not measure in this study). Qualitative work with women with disabilities reveals a host of disability-specific access challenges, including but not limited to physical inaccessibility, provider attitudes, discrimination/marginalization by providers, inadequate provider clinical training/skills/ knowledge for providing reproductive health care to people with disabilities, inadequate/nonexistent sign language capacity at health facilities, and lack of accessible health education information (Ahumuza et al. 2014; Arulogun et al. 2013; Burke et al. 2017; Horner-Johnson et al. 2022, 2021; Tanabe et al. 2015). Young people (age 18–24) with disabilities in three Senegalese towns expressly articulated a need for sexual and reproductive health services, suggesting availability was an issue (Burke et al. 2017). Provider attitudes are one barrier. Referring to high-income countries like the U.S., Iezzoni (2009) argues that health providers may mistakenly believe, or expect, women with disabilities of childbearing age to be asexual and fail to offer relevant services. Services, even when available, may not be organized to seamlessly accommodate clients with disabilities. Nigerian adolescent girls with hearing impairment in Ibadan cited communication barriers to their use of reproductive health services, but also noted that they remained embarrassed to asked questions around interpreters when such services were offered (Arulogun et al. 2013).

Our study found few differences in contraceptive knowledge and overall contraceptive use. Women with disabilities have greater contraceptive knowledge in one country (Nigeria) and greater contraceptive use in two countries (Pakistan and Uganda). We only found one study in a LMIC that compared use between women with and without disabilities; that study (in Sierra Leone) found no difference (Trani et al. 2011). This finding differs from a systematic review of 54 studies in 'very high human development countries' finding evidence that women with disabilities had lower contraceptive knowledge in some but not all studies (Horner-Johnson et al. 2019). The literature on contraceptive use lacks consensus (Horner-Johnson et al. 2019). For example, one study in seven U.S. states found similar rates of contraceptive use regardless of disability status, just as our study did (Haynes et al. 2018). Meanwhile, larger U.S. studies found that women with disabilities were less likely than those without to receive contraceptive services (Mosher et al. 2017; Mosher et al. 2018). Our study, consistently showing no disadvantage in overall use of contraception, stands in contrast to these mixed results regarding use.

Of interest, however, are several studies in a range of settings showing differences in the contraceptive methods used by women with disabilities, even when contraceptive prevalence is similar (Haynes et al. 2018; Horner-Johnson et al. 2019; Mosher et al. 2018; Mosher et al. 2017; Nunes et al. 2017; Senders and Horner-Johnson 2022). These studies typically show a heavier reliance on permanent or long-term methods among women with disabilities.

In this study, we also find that women with disabilities nearly universally are more likely to be using sterilization than women without disabilities. These differences are consistent across eight of nine countries with diverse method mixes, and remain significant with controls in five countries. Such differences, in and of themselves, may not be material so long as they reflect the preferences and choices of women with disabilities. Absent evidence of fundamental differences in preferences, however, it is worrisome if health providers are steering women with disabilities to certain methods because of misconceptions about what methods they are capable of managing, judgment about the (ir)responsibility of becoming pregnant, or other

biases. In one study in the United States, women with disabilities described physicians making unilateral decisions about the contraceptive method the women should use (Horner-Johnson et al. 2022). Our findings in a broad range of settings suggest the need to screen for and redress provider biases and to critically review policies and procedures, from the national to facility level, that may reduce the autonomy of women with disabilities to decide on and use the contraceptive method of their choice.

A key finding in our study is that, universally, women with disabilities have lower odds of unintended pregnancy. These findings stand in sharp contrast with the scant literature available. We did not find any other study that compared unintended pregnancy among women with and without disabilities in LMICs. A systematic review of original research studies in "very high human development countries" had inconclusive findings with regard to unintended pregnancy and disability (Horner-Johnson et al. 2019). In the U.S., a higher proportion of pregnancies was unintended among women with disabilities (Horner-Johnson et al. 2020) and in an Ontario, Canada study, women with intellectual and developmental disabilities had higher rates of rapid repeat pregnancies than women without such disabilities (though that pattern may be partially explained by social, health, and care disparities) (Brown et al. 2018). A study in Portugal found that adolescent girls with intellectual disabilities were less likely to experience unintended pregnancy than adolescent girls without intellectual disabilities (Nunes et al. 2017). (It is interesting to note here that they were also more likely to make a first ob-gyn appointment out of desire for contraception). An Indian study found, as we do, that women with disabilities were less likely to experience pregnancy than women with no disabilities (Murthy et al. 2014), while another study in the U.S. found similar rates of pregnancy among women with and without disabilities, though women with "complex disabilities" (defined by the researchers as those impacting self-care and work) were less likely to experience pregnancy (Horner-Johnson et al. 2016).

Pakistan is something of an outlier in our study, particularly regarding access to health services. Here, women with disabilities have *lower* rather than higher odds of experiencing big problems accessing services. There are several possible explanations. First, Pakistan is the only survey in our study that is an ever-married women sample. It is representative of predominantly currently married women and excludes never-married women, a factor that may shape the relationship between access to services and disability status. Second, Pakistan is among the countries with higher prevalence of disability. Furthermore, the distribution of types of disability are different than elsewhere. Vision disabilities are relatively common, as they are in other countries. However, the most common disability is speech/communication, which is relatively uncommon elsewhere. Third, the distribution of problems accessing health services is also different in Pakistan. Whereas financial obstacles are the frequent barrier elsewhere, in Pakistan not wanting to go alone (58%) is the most common problem reported. Additionally, getting permission to go is more frequently reported in Pakistan (21%) than in any other country except Timor-Leste (34%). It is possible that the different disabilities and/or the different types of problems accessing health services are reflected in an unusual association between disability status, marital status, and access.

4.1 Limitations

While this study has its strengths, there are several limitations to note. First, these analyses use cross-sectional data and therefore we cannot determine causal direction. Second, we estimate parsimonious models. We do so because we were not seeking to describe all factors associated with the outcome, but rather to isolate the effect of disability status net of possible confounders. We could be subject to omitted

variable bias if we excluded some factor that would make detected association spurious. However, we did include the most likely confounding factor—age—as we know that likelihood of disability increases with age.

Third, disability is not especially common in any of our study countries, and therefore, the small numbers of women with disabilities in our sample may make it more difficult to detect significant associations where they exist. Fourth, our measure of disability is limited to the six functional areas measured by the WG-SS. We may undercount some disabilities that are not well captured by these measures. Further, our measure of disability relies on proxy reports. Proxy reports of disability may be subject to some degree of underreporting as well as some degree of misclassification. However, this seems to be limited and therefore threats to inference should be minimal.

4.2   Conclusion

This study is one of the first multi-country analyses of disability and multiple reproductive health outcomes. In contrast to our expectation, we did not find widespread disadvantage in health care access and health outcomes for women with disability. Rather, we found that women with disabilities are similar to women without disabilities in terms of their fertility intentions, sexual activity, and use of maternal health services. Encouragingly, we find that women with disabilities have similar or higher rates of contraceptive knowledge and use and are consistently less likely to experience unintended pregnancy. Of concern, we find that women with disabilities experience greater difficulties accessing medical services when sick in almost half of our study countries. Health systems should continue to expand availability of and improve quality of reproductive health services to all potential clients, including those with disabilities, and should focus on ensuring care that centers disabled clients' needs, dignity, and autonomous choices. This study contributes to a more nuanced and accurate understanding of the reproductive health needs and experiences of women with disabilities. More work, both qualitative and quantitative, is needed to further do away with the generalizations, simplifications, and assumptions that rob development work of any chance of true inclusivity (Grech 2021).

REFERENCES

Abdul Karimu, A. T. F. 2018. Disabled Persons in Ghanaian Health Strategies: Reflections on the 2016 Adolescent Reproductive Health Policy. *Reproductive Health Matters* 26 (54): 20–24. https://www.ncbi.nlm.nih.gov/pubmed/30362391

Ahumuza, S. E., J. K. Matovu, J. B. Ddamulira, and F. K. Muhanguzi. 2014. Challenges in Accessing Sexual and Reproductive Health Services by People with Physical Disabilities in Kampala, Uganda. *Reproductive Health* 11 (59): 1–9. https://doi.org/10.1186/1742-4755-11-59

Alemu, T., and M. Fantahun. 2011. Sexual and Reproductive Health Status and Related Problems of Young People with Disabilities in Selected Associations of People with Disability, Addis Ababa, Ethiopia *Ethiopian Medical Journal* 49 (2): 97–108.

Alhusen, J. L., T. Bloom, J. Anderson, and R. B. Hughes. 2020. Intimate Partner Violence, Reproductive Coercion, and Unintended Pregnancy in Women with Disabilities. *Disability and Health Journal* 13 (2): 100849. https://doi.org/10.1016/j.dhjo.2019.100849

Arulogun, O. S., M. A. Titiloye, N. B. Afolabi, O. E. Oyewole, and O. G. Nwaorgu. 2013. Experiences of Girls with Hearing Impairment in Accessing Reproductive Health Care Services in Ibadan, Nigeria. *African Journal of Reproductive Health* 17 (1): 85–93. http://doi.org/10.4314/ajrh.v17i1

Bloom, T. L., W. Mosher, J. Alhusen, H. Lantos, and R. B. Hughes. 2017. Fertility Desires and Intentions among U.S. Women by Disability Status: Findings from the 2011–2013 National Survey of Family Growth. *Maternal and Child Health Journal* 21 (8): 1606–1615. https://www.ncbi.nlm.nih.gov/pubmed/28197818

Brown, H. K., J. G. Ray, N. Liu, Y. Lunsky, and S. N. Vigod. 2018. Rapid Repeat Pregnancy among Women with Intellectual and Developmental Disabilities: A Population-Based Cohort Study. *CMAJ* 190 (32): E949-E956. https://doi.org/10.1503/cmaj.170932

Burke, E., F. Kébé, I. Flink, M. van Reeuwijk, and A. le May. 2017. A Qualitative Study to Explore the Barriers and Enablers for Young People with Disabilities to Access Sexual and Reproductive Health Services in Senegal. *Reproductive Health Matters* 25 (50): 43–54. https://doi.org/10.1080/09688080.2017.1329607

Carew, M. T., S. H. Braathen, L. Swartz, X. Hunt, and P. Rohleder. 2017. The Sexual Lives of People with Disabilities within Low- and Middle-Income Countries: A Scoping Study of Studies Published in English. *Global Health Action* 10 (1): 1337342. https://doi.org/10.1080/16549716.2017.1337342

Devine, A., R. Ignacio, K. Prenter, L. Temminghoff, L. Gill-Atkinson, J. Zayas, M. J. Marco, and C. Vaughan. 2017. Freedom to Go Where I Want": Improving Access to Sexual and Reproductive Health for Women with Disabilities in the Philippines. *Reproductive Health Matters* 25 (50): 55–65. https://doi.org/10.1080/09688080.2017.1319732

Devkota, H. R., M. Kett, and N. Groce. 2019. Societal Attitude and Behaviours Towards Women with Disabilities in Rural Nepal: Pregnancy, Childbirth and Motherhood. *BMC Pregnancy and Childbirth* 19 (1): 20. https://www.ncbi.nlm.nih.gov/pubmed/30626360

Early, D., J. Cross Riedel, H. Thiel de Bocanegra, D. Swann, and E. B. Schwarz. 2015. Differences in Contraceptive Use between Women Reporting Reproductive Coercion and Intimate Partner Violence. *Contraception* 92 (4): 362. http://dx.doi.org/10.1016/j.contraception.2015.06.043

Elkasabi, M. 2021. Differences in Proxy-Reported and Self-Reported Disability in the Demographic and Health Surveys. *Journal of Survey Statistics and Methodology* 9 (2): 335–351. https://doi.org/10.1093/jssam/smaa041

FP2020. 2015. *Family Planning 2020: Rights and Empowerment Principles for Family Planning*. Washington, DC: FP2020 Rights & Empowerment Working Group. http://www.familyplanning2020.org/sites/default/files/rights-based-fp/FP2020_Statement_of_Principles_FINAL.pdf

Fraser, E., N. Corby, and J. Meaney-Davis. 2021. *Family Planning for Women and Girls with Disabilities*. Disability Inclusion Helpdesk Report No 60. London, UK: Disability Inclusion Helpdesk. https://www.sddirect.org.uk/media/2219/did-query-no-60-family-planning.pdf

Grech, S. 2021. Critical Thinking on Disability and Development in the Global South. In *The Oxford Handbook of the Sociology of Disability*, edited by Robin Brown, Michelle Maroto, and David Pettinicchio.

GSS, and Macro International. 1994. *Ghana Demographic and Health Survey 1993*. Calverton, Maryland, USA: Ghana Statistical Service (GSS) and Macro International. http://dhsprogram.com/pubs/pdf/FR59/FR59.pdf

Hameed, S., A. Maddams, H. Lowe, L. Davies, R. Khosla, and T. Shakespeare. 2020. From Words to Actions: Systematic Review of Interventions to Promote Sexual and Reproductive Health of Persons with Disabilities in Low-and Middle-Income Countries. *BMJ Global Health* 5 (10): e002903. http://dx.doi.org/10.1136/bmjgh-2020-002903

Haynes, R. M., S. L. Boulet, M. H. Fox, D. D. Carroll, E. Courtney-Long, and L. Warner. 2018. Contraceptive Use at Last Intercourse among Reproductive-Aged Women with Disabilities: An Analysis of Population-Based Data from Seven States. *Contraception* 97 (6): 538–545. https://doi.org/10.1016/j.contraception.2017.12.008

Horner-Johnson, W., B. G. Darney, S. Kulkarni-Rajasekhara, B. Quigley, and A. B. Caughey. 2016. Pregnancy among US Women: Differences by Presence, Type, and Complexity of Disability. *American Journal of Obstetrics and Gynecology* 214 (4): 529. e1–529. e9. https://doi.org/10.1016/j.ajog.2015.10.929

Horner-Johnson, W., M. Dissanayake, J. P. Wu, A. B. Caughey, and B. G. Darney. 2020. Pregnancy Intendedness by Maternal Disability Status and Type in the United States. *Perspectives on Sexual and Reproductive Health* 52 (1): 31–38. https://onlinelibrary.wiley.com/doi/abs/10.1363/psrh.12130

Horner-Johnson, W., K. A. Klein, J. Campbell, and J. M. Guise. 2021. Experiences of Women with Disabilities in Accessing and Receiving Contraceptive Care. *Journal of Obstetric, Gynecologic & Neonatal Nursing* 50 (6): 732–741. https://www.ncbi.nlm.nih.gov/pubmed/34389287

Horner-Johnson, W., K. A. Klein, J. Campbell, and J. M. Guise. 2022. It Would Have Been Nice to Have a Choice: Barriers to Contraceptive Decision-Making among Women with Disabilities. *Women's Health Issues*. https://www.ncbi.nlm.nih.gov/pubmed/35148954

Horner-Johnson, W., E. L. Moe, R. C. Stoner, K. A. Klein, A. B. Edelman, K. B. Eden, E. M. Andresen, A. B. Caughey, and J.-M. Guise. 2019. Contraceptive Knowledge and Use among Women with Intellectual, Physical, or Sensory Disabilities: A Systematic Review. *Disability and Health Journal* 12 (2): 139–154.

ICF International. 2016. *Demographic and Health Surveys Disability Module*, *Demographic and Health Surveys Methodology*. Rockville, MD: ICF International.

Iezzoni, L. I. 2009. Public Health Goals for Persons with Disabilities: Looking Ahead to 2020. *Disability and Health Journal* 2 (3): 111–115.

INSTAT, IPH, and ICF Macro. 2010. *Albania Demographic and Health Survey 2008–09*. Tirana, Albania: Institute of Statistics (INSTAT) at the Institute of Public Health/Albania (IPH) and ICF Macro. http://dhsprogram.com/pubs/pdf/FR230/FR230.pdf

Kassa, T. A., T. Luck, A. Bekele, and S. G. Riedel-Heller. 2016. Sexual and Reproductive Health of Young People with Disability in Ethiopia: A Study on Knowledge, Attitude and Practice: A Cross-Sectional Study. *Globalization and Health* 12 (5): 1–11. https://doi.org/10.1186/s12992-016-0142-3

Kassa, T. A., T. Luck, S. K. Birru, and S. G. Riedel-Heller. 2014. Sexuality and Sexual Reproductive Health of Disabled Young People in Ethiopia. *Sexually Transmitted Diseases* 41 (10): 583–588. https://doi.org/10.1097/OLQ.0000000000000182

Kwagala, B., J. Galande, and P. Musimami. 2019. *Disability, Partner Behaviors, and the Risk of Intimate Partner Violence in Uganda*. DHS Working Papers. Rockville, MD, USA: ICF.

Kwagala, B., and S. O. Wandera. 2021. The Determinants of Early Childbearing by Disability Status in Uganda: An Analysis of Demographic and Health Survey Data. *Pan African Medical Journal* 40: 222. https://www.ncbi.nlm.nih.gov/pubmed/35145584

Latham-Mintus, K., and S. Cordon. 2021. Contextualizing Disability Experiences: Understanding and Measuring How the Environment Influences Disability. In *The Oxford Handbook of the Sociology of Disability*, edited by Robin Brown, Michelle Maroto, and David Pettinicchio

Mac-Seing, M., C. Zarowsky, M. Yuan, and K. Zinszer. 2022. Disability and Sexual and Reproductive Health Service Utilisation in Uganda: An Intersectional Analysis of Demographic and Health Surveys between 2006 and 2016. *BMC Public Health* 22 (1): 438. https://www.ncbi.nlm.nih.gov/pubmed/35246094

Miller, E., M. R. Decker, H. L. McCauley, D. J. Tancredi, R. R. Levenson, J. Waldman, P. Schoenwald, and J. G. Silverman. 2010. Pregnancy Coercion, Intimate Partner Violence and Unintended Pregnancy. *Contraception* 81 (4): 316–322. http://www.sciencedirect.com/science/article/pii/S0010782409005228

Miller, E., H. L. McCauley, D. J. Tancredi, M. R. Decker, H. Anderson, and J. G. Silverman. 2014. Recent Reproductive Coercion and Unintended Pregnancy among Female Family Planning Clients. *Contraception* 89 (2): 122–128. http://www.sciencedirect.com/science/article/pii/S0010782413006598

Moore, A. M., L. Frohwirth, and E. Miller. 2010. Male Reproductive Control of Women Who Have Experienced Intimate Partner Violence in the United States. *Social Science & Medicine* 70 (11): 1737–1744. http://www.sciencedirect.com/science/article/pii/S0277953610001681

Mosher, W., T. Bloom, R. Hughes, L. Horton, R. Mojtabai, and J. L. Alhusen. 2017. Disparities in Receipt of Family Planning Services by Disability Status: New Estimates from the National Survey of Family Growth. *Disability and Health Journal* 10 (3): 394–399. https://doi.org/10.1016/j.dhjo.2017.03.014

Mosher, W., R. B. Hughes, T. Bloom, L. Horton, R. Mojtabai, and J. L. Alhusen. 2018. Contraceptive Use by Disability Status: New National Estimates from the National Survey of Family Growth. *Contraception* 97 (6): 552–558. https://doi.org/10.1016/j.contraception.2018.03.031

MPSMRM, MSP, and ICF International. 2014. *République Démocratique Du Congo Enquête Démographique Et De Santé (Eds-Rdc) 2013–2014*. Rockville, Maryland, USA: Ministère du Plan et Suivi de la Mise en œuvre de la Révolution de la Modernité (MPSMRM), Ministère de la Santé Publique (MSP), and ICF International. http://dhsprogram.com/pubs/pdf/FR300/FR300.pdf

Murthy, G. V. S., N. John, J. Sagar, and G. South India Disability Evidence Study. 2014. Reproductive Health of Women with and without Disabilities in South India, the Side Study (South India Disability Evidence) Study: A Case Control Study. *BMC Women's Health* 14 (1): 146. https://doi.org/10.1186/s12905-014-0146-1

Nunes, F. R. P., F. A. d. Neves, F. d. P. B. Geraldes, and M. F. R. Águas Lopes. 2017. Contraception in Adolescents with Intellectual Disability. *The European Journal of Contraception & Reproductive Health Care* 22 (6): 401–406. https://doi.org/10.1080/13625187.2017.1402875

Robles-Bykbaev, Y., C. Oyola-Flores, V. E. Robles-Bykbaev, M. López-Nores, P. Ingavélez-Guerra, J. J. Pazos-Arias, F. Pesántez-Avilés, and M. Ramos-Cabrer. 2019. A Bespoke Social Network for Deaf Women in Ecuador to Access Information on Sexual and Reproductive Health. *International Journal of Environmental Research and Public Health* 16 (20): 3962. https://doi.org/10.3390/ijerph16203962

Senders, A., and W. Horner-Johnson. 2022. Contraceptive Use among Adolescents with and without Disabilities. *Journal of Adolescent Health* 70 (1): 120–126. https://www.ncbi.nlm.nih.gov/pubmed/34353722

Shandra, C. L., D. P. Hogan, and S. E. Short. 2014. Planning for Motherhood: Fertility Attitudes, Desires, and Intentions among Women with Disabilities. *Perspectives on Sexual and Reproductive Health* 46 (4): 203–10. https://www.ncbi.nlm.nih.gov/pubmed/25209449

Stover, J., and E. Sonneveldt. 2017. Progress toward the Goals of FP2020. *Studies in Family Planning* 48 (1): 83–88. http://dx.doi.org/10.1111/sifp.12014

Tanabe, M., Y. Nagujjah, N. Rimal, F. Bukania, and S. Krause. 2015. Intersecting Sexual and Reproductive Health and Disability in Humanitarian Settings: Risks, Needs, and Capacities of Refugees with Disabilities in Kenya, Nepal, and Uganda. *Sexuality and Disability* 33 (4): 411–427. https://www.ncbi.nlm.nih.gov/pubmed/26594076

Trani, J.-F., J. Browne, M. Kett, O. Bah, T. Morlai, N. Bailey, and N. Groce. 2011. Access to Health Care, Reproductive Health, and Disability: A Large Scale Survey in Sierra Leone. *Social Science & Medicine* 73 (10): 1477–1489. https://doi.org/10.1016/j.socscimed.2011.08.040

United Nations. 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*. A/RES/70/1. New York, NY, USA: UN Division for Sustainable Development Goals and UN General Assembly.
http://wedocs.unep.org/bitstream/handle/20.500.11822/11125/unep_swio_sm1_inf7_sdg.pdf?sequence=1

Washington Group on Disability Statistics. 2020a. *Analytic Guidelines: Creating Disability Identifiers Using the Washington Group Short Set on Functioning (WG-SS) Stata Syntax*. Hyattsville, MD: Washington Group on Disability Statistics. https://www.washingtongroup-disability.com/fileadmin/uploads/wg/Documents/WG_Document__5C_-_Analytic_Guidelines_for_the_WG-SS__Stata_.pdf

Washington Group on Disability Statistics. 2020b. *The Washington Group Short Set on Functioning (WG-SS)*. Hyattsville, MD: Washington Group on Disability Statistics. https://www.washingtongroup-disability.com/fileadmin/uploads/wg/Documents/Questions/Washington_Group_Questionnaire__1_-_WG_Short_Set_on_Functioning.pdf

WHO. 2014. *Ensuring Human Rights in the Provision of Contraceptive Information and Services: Guidance and Recommendations*. Geneva, Switzerland: World Health Organization (WHO).

Yimer, A. S., and L. M. Modiba. 2019. Modern Contraceptive Methods Knowledge and Practice among Blind and Deaf Women in Ethiopia. A Cross-Sectional Survey. *BMC Women's Health* 19 (151): 1–13. https://doi.org/10.1186/s12905-019-0850-y

APPENDIX TABLES

Appendix Table A1   Factors associated with wanting a(nother) child within 2 years. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 11,890)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.94	.410	0.97	.677	0.89	.126	0.81	.005	1.15	.029	0.92	.436	0.94	.482	0.79	.008	0.97	.558
Age (ref = 15–24)																		
25–34	2.44	.000	1.64	.000	1.39	.000	1.61	.000	1.61	.000	1.43	.002	1.13	.110	0.95	.606	1.85	.000
35–44	4.88	.000	1.02	.834	1.08	.127	1.09	.400	3.05	.000	2.59	.000	1.01	.939	0.60	.000	1.62	.000
45–49	2.20	.000	0.28	.000	0.28	.000	0.29	.000	1.71	.001	1.12	.496	0.25	.000	0.32	.000	0.53	.000
Highest level of education completed (ref = none)																		
Primary	1.08	.562	0.92	.339	0.74	.000	0.87	.148	1.07	.539	0.89	.222	1.39	.199	0.82	.033	0.90	.218
Secondary or higher	0.91	.498	0.78	.003	0.78	.000	0.73	.001	1.00	.963	0.61	.000	1.32	.268	0.92	.275	0.84	.079
Household wealth quintile (ref = poorest)																		
Poorer	1.19	.104	0.99	.901	0.86	.006	0.71	.001	1.09	.270	0.66	.000	0.87	.191	1.06	.552	1.00	.976
Middle	1.18	.153	1.01	.881	0.78	.000	0.59	.000	1.16	.073	0.70	.000	0.96	.713	1.04	.730	1.04	.636
Richer	1.31	.007	1.24	.037	0.76	.000	0.54	.000	1.27	.005	0.74	.009	0.74	.004	0.90	.305	1.05	.472
Richest	1.43	.001	1.25	.039	0.84	.009	0.50	.000	1.51	.000	0.74	.007	0.67	.001	0.75	.023	1.18	.031
Current marital status (ref = never/formerly married)																		
Currently married	0.84	.007	0.21	.000	0.37	.000			0.48	.000	0.09	.000	1.40	.000	0.28	.000	0.77	.000
Parity (ref = 0–1)																		
2–3	0.15	.000	0.35	.000	0.37	.000	0.26	.000	0.14	.000	0.29	.000	0.22	.000	0.65	.000	0.36	.000
4 or more	0.05	.000	0.19	.000	0.19	.000	0.07	.000	0.04	.000	0.11	.000	0.08	.000	0.43	.000	0.15	.000

Note: Formerly married women are omitted in Pakistan.

Appendix Table A2   Factors associated with ideal number of children. Coefficients from separate multivariable linear regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	-0.01	.732	0.03	.694	-0.10	.116	-0.26	.000	0.06	.071	-0.06	.379	0.01	.895	0.03	.709	-0.01	.845
Age (ref = 15–24)																		
25–34	0.06	.060	-0.18	.015	-0.37	.000	-0.05	.380	-0.12	.000	-0.19	.003	0.13	.007	-0.15	.032	-0.09	.032
35–44	0.25	.000	-0.09	.381	-0.50	.000	0.03	.666	0.02	.631	-0.39	.000	0.17	.003	-0.21	.011	0.30	.000
45–49	0.46	.000	0.16	.242	-0.34	.000	0.17	.085	0.28	.000	-0.41	.001	0.26	.003	-0.03	.758	0.74	.000
Highest level of education completed (ref = none)																		
Primary	-0.09	.070	-0.09	.227	-1.23	.000	-0.33	.000	-0.16	.013	-0.52	.000	-0.23	.140	-0.03	.708	-0.71	.000
Secondary or higher	-0.11	.034	-0.36	.000	-1.78	.000	-0.48	.000	-0.26	.000	-0.93	.000	-0.26	.075	0.00	.941	-0.99	.000
Household wealth index (ref = poorest)																		
Poorer	-0.14	.004	-0.05	.648	-0.36	.000	-0.53	.000	0.09	.024	-0.23	.011	0.04	.580	-0.16	.041	-0.11	.080
Middle	-0.35	.000	-0.31	.002	-0.81	.000	-0.89	.000	0.05	.304	-0.46	.000	-0.10	.180	-0.07	.460	-0.08	.206
Richer	-0.35	.000	-0.64	.000	-1.16	.000	-0.96	.000	0.09	.037	-0.79	.000	-0.21	.004	-0.07	.425	-0.16	.024
Richest	-0.38	.000	-1.00	.000	-1.59	.000	-1.11	.000	0.12	.015	-1.00	.000	-0.30	.000	-0.29	.003	-0.46	.000
Current marital status (ref = never/formerly married)																		
Currently married	0.11	.001	0.21	.008	0.46	.000	0.71	.000	0.12	.000	0.44	.000	0.27	.000	0.82	.000	0.19	.000
Parity (ref = 0–1)																		
2–3	0.24	.000	0.21	.002	0.13	.003	0.06	.219	0.18	.000	0.15	.032	0.24	.000	0.37	.000	0.34	.000
4 or more	0.59	.000	0.95	.000	1.18	.000	0.64	.000	0.95	.000	0.63	.000	0.83	.000	1.53	.000	1.21	.000

Appendix Table A3   Factors associated with having had sex in the last month. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 11,878)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,503)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.88	.024	0.86	.062	0.99	.918	0.91	.182	0.85	.042	0.75	.022	0.97	.711	0.92	.311	0.98	.730
Age (ref = 15–24)																		
25–34	1.20	.011	1.21	.046	1.44	.000	1.11	.279	1.71	.000	1.26	.023	1.99	.000	1.14	.198	1.15	.044
35–44	0.94	.408	1.22	.066	1.25	.000	1.06	.622	1.28	.045	1.33	.030	1.49	.000	1.23	.052	0.98	.844
45–49	0.93	.490	0.82	.167	0.77	.000	0.52	.000	1.01	.948	1.58	.059	1.00	.976	0.89	.304	0.79	.023
Highest level of education completed (ref = none)																		
Primary	0.98	.747	0.89	.211	0.60	.000	1.02	.851	1.31	.014	1.20	.076	1.21	.461	1.11	.295	1.37	.000
Secondary or higher	1.03	.749	1.28	.011	0.67	.000	1.03	.715	0.95	.725	0.92	.430	1.13	.571	0.98	.796	1.27	.009
Household wealth index (ref = poorest)																		
Poorer	0.96	.625	0.84	.068	0.99	.841	0.81	.047	1.25	.027	1.12	.287	1.23	.045	0.98	.786	1.13	.072
Middle	1.00	.960	0.83	.086	0.88	.032	0.83	.079	1.38	.003	1.03	.822	1.21	.068	0.94	.587	1.13	.084
Richer	1.25	.009	0.91	.465	0.96	.497	0.78	.032	1.46	.001	1.00	.967	1.14	.256	0.98	.812	1.37	.000
Richest	1.11	.257	0.85	.201	1.01	.881	0.88	.312	1.01	.907	1.00	.991	1.03	.775	0.97	.751	1.21	.023
Current marital status (ref = never/formerly married)																		
Currently married	11.99	.000	20.07	.000	24.23	.000			100.20	.000	75.32	.000	7.63	.000	181.30	.000	21.84	.000
Parity (ref = 0–1)																		
2–3	0.94	.405	0.99	.907	0.88	.014	0.80	.006	1.41	.001	1.19	.055	0.97	.739	1.40	.000	1.37	.000
4 or more	1.12	.175	1.03	.758	0.84	.002	0.86	.095	1.28	.082	1.38	.002	0.80	.048	1.42	.000	1.23	.006

Note: Formerly married women are omitted in Pakistan.

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Appendix Table A4 Factors associated with experiencing big problems seeking medical advice or treatment when sick. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value	*OR*	*p* value
Any disability (ref = no)																		
Yes	1.01	.854	0.89	.121	0.97	.676	0.86	.026	1.37	.000	1.46	.007	1.31	.006	0.89	.150	1.30	.000
Age (ref = 15–24)																		
25–34	0.93	.316	1.02	.779	1.04	.261	0.72	.001	1.12	.061	1.03	.789	1.06	.547	0.82	.008	1.00	.953
35–44	0.88	.183	1.28	.016	1.07	.184	0.48	.000	0.93	.353	1.14	.261	1.12	.381	0.90	.295	0.87	.047
45–49	1.02	.882	1.34	.023	1.13	.032	0.38	.000	0.85	.077	1.54	.007	1.03	.868	0.92	.478	0.86	.095
Highest level of education completed (ref = none)																		
Primary	0.78	.022	0.86	.047	0.93	.158	0.85	.053	0.80	.002	0.85	.083	1.25	.341	0.74	.000	0.89	.129
Secondary or higher	0.55	.000	0.60	.000	0.79	.000	0.64	.000	0.65	.000	0.68	.000	1.12	.621	0.61	.000	0.71	.000
Household wealth index (ref = poorest)																		
Poorer	0.63	.000	0.91	.325	0.71	.000	1.03	.847	0.59	.000	0.66	.001	0.80	.033	0.78	.015	0.66	.000
Middle	0.45	.000	0.61	.000	0.53	.000	0.74	.050	0.40	.000	0.38	.000	0.56	.000	0.56	.000	0.49	.000
Richer	0.35	.000	0.47	.000	0.39	.000	0.44	.000	0.29	.000	0.28	.000	0.37	.000	0.39	.000	0.41	.000
Richest	0.20	.000	0.37	.000	0.24	.000	0.34	.000	0.15	.000	0.18	.000	0.31	.000	0.24	.000	0.20	.000
Current marital status (ref = never/formerly married)																		
Currently married	0.69	.000	0.83	.021	0.71	.000	0.94	.631	0.74	.000	0.58	.000	0.92	.410	0.94	.393	0.74	.000
Parity (ref = 0–1)																		
2–3	1.11	.257	1.36	.000	1.16	.000	0.74	.001	1.19	.010	1.18	.083	1.00	.977	0.98	.847	1.22	.001
4 or more	1.27	.032	1.31	.005	1.12	.023	0.74	.002	1.50	.000	1.54	.000	1.14	.322	0.95	.583	1.55	.000

Appendix Table A5   Factors associated with at least 4 antenatal visits for most recent birth, among women with a birth in the past 5 years. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 5,005)		Mali 2018 (N = 6,368)		Nigeria 2018 (N = 21,792)		Pakistan 2017–18 (N = 6,803)		Rwanda 2019–20 (N = 6,167)		Senegal 2018 (N = 4,703)		South Africa 2016 (N = 3,036)		Timor-Leste 2016 (N = 4,916)		Uganda 2016 (N = 10,263)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.99	.894	1.08	.379	1.07	.539	1.19	.100	1.00	.979	0.99	.929	0.93	.731	1.11	.450	1.13	.035
Age (ref = 15–24)																		
25–34	1.83	.000	1.23	.031	1.39	.000	1.45	.000	1.36	.000	1.47	.002	1.26	.206	1.07	.578	1.09	.199
35–44	2.74	.000	1.59	.000	1.58	.000	1.50	.004	1.76	.000	1.83	.001	0.89	.574	0.99	.925	0.86	.107
45–49	2.09	.003	1.11	.644	1.76	.000	0.85	.636	1.30	.192	1.64	.044	0.28	.005	0.96	.848	0.81	.260
Highest level of education completed (ref = none)																		
Primary	1.72	.000	1.48	.000	2.54	.000	1.57	.000	1.00	.972	1.34	.003	0.74	.543	1.41	.005	1.06	.495
Secondary or higher	2.78	.000	2.16	.000	3.83	.000	2.46	.000	1.13	.335	1.74	.000	0.56	.212	1.73	.000	1.35	.001
Household wealth index (ref = poorest)																		
Poorer	1.20	.150	1.31	.022	1.39	.000	1.53	.002	1.20	.051	1.63	.000	1.30	.218	1.14	.260	1.11	.176
Middle	1.70	.000	1.65	.000	2.18	.000	2.35	.000	1.38	.001	1.94	.000	1.53	.052	1.50	.002	1.20	.042
Richer	2.09	.000	2.83	.000	3.05	.000	4.03	.000	1.51	.000	3.42	.000	1.37	.177	2.53	.000	1.34	.001
Richest	3.45	.000	6.99	.000	6.24	.000	9.31	.000	1.68	.000	3.71	.000	1.80	.036	4.07	.000	1.50	.000
Current marital status (ref = never/formerly married)																		
Currently married	1.43	.001	1.37	.049	1.15	.078	1.79	.131	1.63	.000	1.45	.055	1.06	.702	1.48	.084	1.19	.006
Parity (ref = 0–1)																		
2–3	0.68	.001	0.86	.156	0.82	.001	0.64	.000	0.76	.001	0.61	.003	0.70	.057	1.06	.623	0.97	.672
4 or more	0.45	.000	0.83	.118	0.62	.000	0.45	.000	0.46	.000	0.43	.000	0.71	.136	0.89	.387	0.85	.069

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Appendix Table A6   Factors associated with facility delivery for most recent birth, among women with a birth in the past 3 years. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 5,005)		Mali 2018 (N = 6,368)		Nigeria 2018 (N = 21,792)		Pakistan 2017–18 (N = 6,803)		Rwanda 2019–20 (N = 6,167)		Senegal 2018 (N = 4,703)		South Africa 2016 (N = 3,036)		Timor-Leste 2016 (N = 4,916)		Uganda 2016 (N = 10,263)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	1.04	.726	0.90	.326	1.02	.877	0.92	.400	1.00	.978	1.07	.757	0.55	.056	0.96	.759	0.88	.061
Age (ref = 15–24)																		
25–34	1.52	.000	1.27	.039	1.63	.000	1.17	.157	1.66	.059	1.15	.412	1.94	.051	1.34	.009	1.11	.245
35–44	1.68	.001	1.43	.014	2.28	.000	1.23	.120	1.79	.041	1.51	.018	1.91	.253	1.48	.004	1.02	.872
45–49	1.84	.023	1.34	.205	2.55	.000	1.08	.813	1.13	.730	1.39	.191	0.68	.645	1.29	.325	0.87	.486
Highest level of education completed (ref = none)																		
Primary	1.77	.000	1.88	.000	2.66	.000	1.43	.002	1.91	.000	1.79	.002	1.35	.603	1.12	.398	1.04	.664
Secondary or higher	3.07	.000	3.01	.000	5.09	.000	2.03	.000	3.47	.000	2.11	.001	1.49	.477	1.89	.000	2.18	.000
Household wealth index (ref = poorest)																		
Poorer	1.72	.000	1.29	.047	1.74	.000	1.21	.110	1.41	.018	2.68	.000	1.43	.226	1.76	.000	0.93	.433
Middle	3.26	.000	1.85	.000	2.90	.000	2.07	.000	1.97	.000	9.58	.000	4.54	.000	3.47	.000	1.23	.054
Richer	4.72	.000	4.96	.000	4.34	.000	3.14	.000	3.62	.000	19.48	.000	2.00	.074	7.61	.000	1.60	.000
Richest	10.45	.000	17.10	.000	7.56	.000	6.81	.000	6.81	.000	14.63	.000	8.96	.015	23.41	.000	4.02	.000
Current marital status (ref = never/formerly married)																		
Currently married	1.06	.574	1.05	.832	0.97	.734	1.21	.533	1.47	.008	1.33	.385	1.13	.602	2.46	.000	1.08	.317
Parity (ref = 0–1)																		
2–3	0.42	.000	0.58	.000	0.65	.000	0.61	.000	0.23	.000	0.36	.000	0.27	.002	0.43	.000	0.61	.000
4 or more	0.36	.000	0.59	.001	0.45	.000	0.38	.000	0.09	.000	0.24	.000	0.11	.000	0.31	.000	0.40	.000

Appendix Table A7   Factors associated with number of contraceptive methods known. Coefficients from separate multivariable regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.05	.408	-0.05	.669	0.30	.002	0.11	.174	-0.05	.248	0.22	.202	-0.08	.446	0.08	.611	0.06	.254
Age (ref = 15–24)																		
25–34	1.16	.000	1.07	.000	1.73	.000	0.80	.000	1.74	.000	1.96	.000	1.18	.000	1.52	.000	1.06	.000
35–44	1.41	.000	1.32	.000	2.15	.000	1.11	.000	1.90	.000	2.39	.000	1.28	.000	1.39	.000	1.19	.000
45–49	1.53	.000	1.18	.000	2.24	.000	1.12	.000	1.99	.000	2.15	.000	1.13	.000	0.72	.001	1.22	.000
Highest level of education completed (ref = none)																		
Primary	0.44	.000	1.15	.000	1.50	.000	0.68	.000	0.34	.000	0.68	.000	0.98	.004	0.35	.023	1.05	.000
Secondary or higher	1.11	.000	2.38	.000	2.55	.000	1.07	.000	1.32	.000	2.48	.000	2.22	.000	1.51	.000	2.41	.000
Household wealth index (ref = poorest)																		
Poorer	0.22	.040	-0.10	.619	0.42	.001	0.42	.003	0.28	.000	0.81	.000	0.50	.000	0.48	.024	0.40	.000
Middle	0.48	.000	0.20	.374	1.08	.000	0.64	.000	0.46	.000	1.38	.000	0.68	.000	0.60	.000	0.50	.000
Richer	0.74	.000	1.02	.000	1.66	.000	0.68	.000	0.74	.000	1.69	.000	1.02	.000	1.05	.000	0.61	.000
Richest	1.09	.000	1.60	.000	2.38	.000	0.99	.000	0.78	.000	2.13	.000	1.66	.000	2.20	.000	0.88	.000
Current marital status (ref = never/formerly married)																		
Currently married	0.66	.000	1.50	.000	1.27	.000	0.29	.058	0.81	.000	1.60	.000	0.17	.047	1.81	.000	1.07	.000
Parity (ref = 0–1)																		
2–3	0.31	.000	0.68	.000	0.88	.000	1.30	.000	1.05	.000	1.00	.000	0.06	.469	1.12	.000	1.26	.000
4 or more	0.34	.000	0.75	.000	0.43	.000	1.38	.000	0.94	.000	0.94	.000	0.14	.277	1.13	.000	1.23	.000

Appendix Table A8   Factors associated with current use of any contraception. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	1.02	.759	1.11	.252	0.91	.335	1.27	.001	0.96	.547	1.07	.542	0.96	.641	0.96	.732	1.12	.014
Age (ref = 15–24)																		
25–34	1.04	.567	1.04	.686	1.64	.000	0.98	.833	1.34	.000	1.23	.151	1.42	.000	1.15	.167	1.17	.014
35–44	0.67	.000	0.99	.920	1.74	.000	1.03	.826	0.71	.000	1.10	.498	0.84	.102	0.79	.058	1.03	.650
45–49	0.28	.000	0.42	.000	0.89	.296	0.62	.001	0.27	.000	0.84	.399	0.39	.000	0.40	.000	0.49	.000
Highest level of education completed (ref = none)																		
Primary	1.11	.200	1.32	.010	3.10	.000	1.33	.001	1.52	.000	1.78	.000	1.22	.400	1.43	.000	1.64	.000
Secondary or higher	1.35	.001	2.43	.000	4.67	.000	1.74	.000	1.54	.000	1.80	.000	1.68	.012	1.19	.066	2.39	.000
Household wealth index (ref = poorest)																		
Poorer	1.13	.176	1.05	.758	1.47	.000	1.67	.000	0.96	.523	1.73	.000	1.05	.650	0.95	.642	1.50	.000
Middle	1.59	.000	1.58	.001	2.08	.000	2.27	.000	0.89	.159	1.86	.000	1.09	.391	1.15	.188	1.77	.000
Richer	1.56	.000	2.06	.000	3.11	.000	2.59	.000	0.92	.282	2.54	.000	1.14	.234	1.27	.036	2.19	.000
Richest	1.46	.000	1.93	.000	3.61	.000	3.21	.000	0.62	.000	2.61	.000	0.93	.547	1.49	.003	2.34	.000
Current marital status (ref = never/formerly married)																		
Currently married	2.87	.000	1.30	.062	1.51	.000	5.50	.000	6.31	.000	3.39	.000	1.19	.011	30.62	.000	2.15	.000
Parity (ref = 0–1)																		
2–3	2.05	.000	2.00	.000	2.04	.000	7.64	.000	5.02	.000	3.92	.000	2.46	.000	3.39	.000	2.49	.000
4 or more	2.48	.000	2.92	.000	2.87	.000	16.58	.000	5.53	.000	4.95	.000	2.54	.000	4.45	.000	3.35	.000

Appendix Table A9 Factors associated with use of female sterilization. Odds ratios from separate multivariable logistic regressions among women currently using contraception

	Haiti 2016–17 (N = 2,440)		Mali 2018 (N = 862)		Nigeria 2018 (N = 4,584)		Pakistan 2017–18 (N = 4,095)		Rwanda 2019–20 (N = 4,343)		Senegal 2018 (N = 1,530)		South Africa 2016 (N = 4,100)		Timor-Leste 2016 (N = 1,781)		Uganda 2016 (N = 3,992)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	1.9	.010	0.8	.754	3.8	.001	1.3	.069	1.5	.012	2.9	.089	1.4	.053	1.7	.083	1.4	.034
Age (ref = 15–24)																		
25–34	0.1	.000	0.1	.001	0.8	.798	9.2	.001	0.2	.000	0.1	.003	5.8	.013	0.3	.064	0.1	.000
35–44	0.3	.000	0.4	.112	3.4	.262	19.4	.000	0.7	.174	0.2	.002	16.2	.000	0.8	.687	0.5	.001
45–49					11.3	.029	29.6	.000					26.4	.000				
Highest level of education completed (ref = none)																		
Primary	1.4	.315	0.5	.446	0.2	.000	1.0	.841	1.0	.900	1.1	.929	0.4	.075	1.4	.432	1.0	.892
Secondary or higher	1.3	.574	1.3	.737	0.3	.008	0.7	.054	1.7	.148	1.2	.822	0.5	.083	2.1	.022	0.7	.161
Household wealth index (ref = poorest)																		
Poorer	1.9	.064	2.0	.469	1.3	.661	0.8	.156	0.7	.384	1.1	.882	1.0	.934	2.5	.131	0.8	.271
Middle	1.6	.207	3.0	.233	1.1	.918	0.6	.010	2.0	.035	1.7	.458	1.6	.099	1.0	.955	0.5	.005
Richer	1.6	.333	1.9	.481	0.8	.716	0.7	.070	3.3	.000	0.5	.482	1.9	.025	3.4	.044	0.5	.002
Richest	2.7	.034	1.9	.490	1.0	1.000	0.7	.056	3.7	.000	1.2	.796	5.8	.000	4.2	.017	0.8	.407
Current marital status (ref = never/formerly married)																		
Currently married	0.4	.050			1.4	.619	0.0	.000	0.8	.635	2.9	.286	1.4	.111	0.1	.083	1.5	.097
Parity (ref = 0–1)																		
2–3	14.2	.004			0.7	.510	13.7	.000	0.2	.000	0.9	.948	4.9	.000	0.9	.891	1.0	.980
4 or more	22.4	.002	101.1	.000			29.7	.000			0.6	.666	11.9	.000	1.7	.548	3.1	.105

Appendix Table A10   Factors associated with experiencing a pregnancy in the past 5 years. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.70	.000	0.80	.008	0.61	.000	0.59	.000	0.82	.002	0.72	.039	0.75	.002	0.66	.000	0.79	.000
Age (ref = 15–24)																		
25–34	0.71	.000	0.36	.000	0.87	.015	0.74	.001	2.03	.000	1.09	.454	0.94	.537	1.05	.678	0.53	.000
35–44	0.13	.000	0.05	.000	0.09	.000	0.08	.000	0.24	.000	0.21	.000	0.15	.000	0.10	.000	0.07	.000
45–49	0.02	.000	0.01	.000	0.01	.000	0.01	.000	0.02	.000	0.03	.000	0.01	.000	0.02	.000	0.01	.000
Highest level of education completed (ref = none)																		
Primary	1.13	.145	0.90	.206	0.98	.681	1.07	.405	1.27	.007	1.11	.334	1.01	.982	1.14	.174	0.96	.622
Secondary or higher	1.24	.037	1.12	.226	1.22	.000	1.63	.000	1.35	.004	1.27	.012	1.38	.197	1.34	.001	1.16	.119
Household wealth index (ref = poorest)																		
Poorer	0.70	.000	0.95	.614	0.91	.138	0.65	.000	0.69	.000	1.07	.459	1.09	.461	0.91	.339	0.86	.024
Middle	0.68	.000	0.89	.254	0.88	.029	0.61	.000	0.62	.000	0.81	.026	0.88	.197	0.76	.011	0.69	.000
Richer	0.52	.000	0.66	.000	0.69	.000	0.55	.000	0.61	.000	0.67	.002	0.80	.033	0.72	.002	0.59	.000
Richest	0.48	.000	0.69	.004	0.62	.000	0.47	.000	0.49	.000	0.88	.325	0.72	.006	0.65	.000	0.55	.000
Current marital status (ref = never/formerly married)																		
Currently married	9.08	.000	9.83	.000	14.25	.000	2.97	.000	7.21	.000	12.04	.000	1.57	.000	61.85	.000	5.50	.000
Parity (ref = 0–1)																		
2–3	5.74	.000	13.48	.000	11.09	.000	8.25	.000	6.25	.000	10.50	.000	7.57	.000	5.12	.000	13.54	.000
4 or more	13.91	.000	34.14	.000	21.43	.000	11.91	.000	13.96	.000	16.38	.000	18.28	.000	8.46	.000	25.00	.000

Appendix Table A11   Factors associated with unintended pregnancy. Odds ratios from separate multivariable logistic regressions

	Haiti 2016–17 (N = 14,371)		Mali 2018 (N = 10,519)		Nigeria 2018 (N = 41,821)		Pakistan 2017–18 (N = 12,364)		Rwanda 2019–20 (N = 14,634)		Senegal 2018 (N = 9,414)		South Africa 2016 (N = 8,514)		Timor-Leste 2016 (N = 12,607)		Uganda 2016 (N = 18,506)	
	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value	OR	p value
Any disability (ref = no)																		
Yes	0.78	.001	0.80	.003	0.63	.000	0.62	.000	0.87	.026	0.69	.002	0.78	.062	0.63	.000	0.72	.000
Age (ref = 15–24)																		
25–34	1.90	.000	0.71	.000	1.00	.926	0.85	.071	2.16	.000	1.06	.514	2.01	.000	1.06	.574	1.19	.008
35–44	0.96	.707	0.26	.000	0.22	.000	0.16	.000	1.13	.195	0.45	.000	0.76	.054	0.15	.000	0.49	.000
45–49	0.21	.000	0.05	.000	0.04	.000	0.02	.000	0.25	.000	0.07	.000	0.09	.000	0.03	.000	0.11	.000
Highest level of education completed (ref = none)																		
Primary	0.90	.243	0.86	.044	0.69	.000	0.90	.168	1.02	.813	1.04	.678	1.09	.826	1.17	.113	0.68	.000
Secondary or higher	0.98	.846	1.13	.139	0.71	.000	1.11	.194	1.00	.972	1.21	.055	1.41	.339	1.44	.000	0.78	.002
Household wealth index (ref = poorest)																		
Poorer	0.82	.040	0.96	.710	0.91	.068	0.65	.000	0.85	.021	0.90	.286	1.02	.852	0.86	.135	1.01	.941
Middle	0.67	.000	0.85	.093	0.81	.000	0.56	.000	0.82	.018	0.77	.017	0.80	.102	0.78	.011	0.93	.343
Richer	0.61	.000	0.73	.002	0.65	.000	0.56	.000	0.82	.012	0.76	.029	0.79	.073	0.73	.001	1.00	.971
Richest	0.71	.002	0.66	.000	0.70	.000	0.56	.000	0.73	.000	0.88	.248	0.88	.349	0.59	.000	1.14	.128
Current marital status (ref = never/formerly married)																		
Currently married	6.50	.000	11.94	.000	14.52	.000	2.55	.000	10.72	.000	14.64	.000	2.44	.000	62.71	.000	4.43	.000
Parity (ref = 0–1)																		
2–3	1.77	.000	4.12	.000	5.72	.000	4.10	.000	1.34	.000	4.74	.000	2.76	.000	3.82	.000	3.14	.000
4 or more	1.15	.249	4.96	.000	6.73	.000	3.66	.000	0.77	.004	4.75	.000	2.70	.000	5.25	.000	2.27	.000