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Disability and female sterilization in Colombia: An analysis of the 2015 Demographic and Health Survey

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ABSTRACT

Objectives: This study uses Demographic and Health Survey (DHS) data from the 2015 Colombia to research the association between female sterilization and disability status, along with the association between age at the time of sterilization, marital status at the time of sterilization, and parity at the time of sterilization.

Methods: The DHS collects and analyzes disability data based on recommendations from the Washington Group, however, Colombia added additional domains which did not allow for guidance from the Washington Group to create a disability severity score to be used. Therefore, three binary disability variables were developed and analyzed separately. Exposures included female sterilization as primary contraceptive method and age, marital status, and parity at time of sterilization, Bivariate analysis between variables were conducted via chi-square. Both crude and adjusted regression models were calculated to determine odds of outcomes.

Results: Chi-squares and logistic regressions were the primary methods of analysis, with the only statistically significant result being the association between parity at time of sterilization and severe disability. Mild and moderate disability were not found to be significantly associated with having a female sterilization, marital status at time of sterilization, or parity at time of sterilization.

Discussion: These results are contradictory to previous research, and it is possible that sterilization as a method of contraception is so common in Colombia that significant differences on the basis of disability status cannot be identified. However, as this study is based on cross-sectional data, causal relationships cannot be determined, nor can the timing of the disability in comparison to the sterilization occurring. The DHS also does not ask about who was the primary decision maker regarding the sterilization, so it is possible women with disabilities are receiving sterilization procedures at similar rates to their non-disabled counterparts, but these decisions are being made on their behalf by family members, legal guardians, or providers without fully informed consent. This study emphasizes the importance of informed consent and the need for future research regarding the decision-making power surrounding female sterilization for disabled women.

Keywords: Colombia; Contraception; Sterilization; Disabled Persons

Introduction

Almost 12% of the population of Latin America and the Caribbean is estimated to live with at least one disability.[1] It was not until the last decade that disabled persons were included in the designs of public policies in this region, making it difficult to assess the role of disability in accessing sexual and reproductive health (SRH) services.[2] Many health services are inaccessible for disabled persons due to physically inaccessible spaces, communications barriers, lack of trained professionals, and financial obstacles.[1] There is a lack of research surrounding disabled women in general, and research surrounding their experiences with accessing SRH services is even scarcer. It is of utmost importance to undertake additional studies not only to expose disabled women barriers to care, but to understand how to make services equitable and accessible to all populations regardless of functional limitations.[3]

Much of the use of family planning and access to SRH services in Colombia is due to the Profamilia program. Profamilia is a non-profit, private organization, and although they provide approximately 70% of Colombia's planning needs, it is not the only program that does so.[4] According to the 2015 *Encuesta Nacional de Demografía y Salud* (ENDS), Colombia's demographic and health survey, 75.9% of women in a union and 77.7% of women not in a union aged 15-49 reported use of modern contraception. This represents approximately a 20% increase in use of modern methods of contraception in Colombia since 1990, much of which is due to the efforts of Profamilia.[5]

Female sterilization is the most commonly used method of contraception among both married and unmarried women at 34.9% and 17.1%, respectively. Female sterilization is typically done when women are quite young. Among women who reported sterilization, approximately 23% underwent the procedure before the age of 25, and around 80% before the age of 35.[5] Despite its common use, there are still concerns about coercive sterilizations since there has been historical use of sterilization to target the reproductive capacity of specific populations, such as disabled women and other disadvantaged groups.[4] Much of this discrimination arises from the reversal of a Colombian law enacted in 2010 by the Colombian Constitutional Court which prohibited the practice of surgical sterilization for contraceptive purposes on all minors. In 2014, however, Colombia validated sterilization of minors with intellectual and psychosocial disabilities with consent from their legal guardian.[6] The Constitutional Court emphasized that this decision protects the dignity and personal integrity of disabled persons, who were considered unable to make reproductive choices, and argued that it protects them against sexual violence as well. However, many organizations rejected this statement saying that "sterilization does not protect anybody from sexual violence and in fact it is a risk factor".[6]

The court decision made in 2014 not only disregarded the United Nations Convention on the Rights of Persons with Disabilities, but also ignored the recommendation by the Committee to Eliminate All Forms of Discrimination Against Women. The Committee specifically directed Colombia to amend its regulatory framework to guarantee that sterilization is conducted with free and informed consent of disabled women and not only of their guardians.[6] The legacy of Colombian law in regard to sterilization has led to allegations of increased and coercive sterilizations among specific female populations, and it is important to record whether disabled women are also more vulnerable to this behavior to create proper and accessible SRH programs.[4]

The aim of this study is to estimate the association between disability and sterilization and to analyze the age and parity at the time of sterilization to determine if there are disparities based on disability status. There is a specific focus on sterilization

because of significant historical evidence of forced sterilization of disabled women internationally and Colombia's history within the Profamilia program.

Methods

This study analyzed the 2015 Colombia DHS to research the association between female sterilization and disability status. The Demographic and Health Surveys (DHS) are nationally representative household surveys that are conducted by governments in partnership with ICF to collect data regarding demographic, fertility, and health indicators. Using a stratified two-stage cluster design, a sampling frame was created from the most recent census provided by the National Statistical Office. In the first stage of sampling, households were randomly selected from rural and urban provinces to create the sampling frame. Households were then divided into clusters with random households chosen for survey completion. Models from data collection are standardized to make data from the DHS comparable across countries.[7]

This study used two of the DHS modules: the Household Questionnaire, and the Woman's Questionnaire.[8] The Household Questionnaire is completed by one member in the household to obtain information about household demographics, education, and assets of the household. The Household Questionnaire also includes a disability module, which collects disability data on all household members based on the Washington Group on Disability Statistics Short Set on Functioning (WG-SS).[9] This module was introduced in 2016 and is optional. Therefore, a limited number of countries include it in their data collection.[10] The Woman's Questionnaire asks women questions regarding background characteristics, reproductive behavior and intentions, contraception, antenatal and postnatal care, breastfeeding, children's health, and the status of women in their respective households.[11]

SAMPLE

This study includes women aged 13-49 years who completed the household and women's questionnaire. A total of 38 718 women completed these questionnaires. Pregnant women and those with missing data were dropped from the study, leading to a final sample of 34 725 women ages 13-49.[5]

MEASURES

Outcomes

The primary outcome of concern in this study is female sterilization. Other outcomes related to female sterilization were also observed including age at the time of sterilization, marital status at the time of sterilization, and parity at the time of sterilization. These were included because studies in other countries have found disabled women are more likely to have been sterilized when unmarried, at younger ages, and before having children.[12]

EXPOSURE

The primary exposure explored in this paper is disability status. The disability module in the DHS is based upon the aforementioned WG-SS where disability status is classified based upon responses to reports of functioning in six functional domains: hearing, seeing, mobility, cognition, communication, and self-care.[13] In addition, Colombia added the following domains: holding and use of arms and hands, relations and interactions with others, and doing daily chores with no respiratory or cardiac conditions.[5] Respondents reported whether they experience any functional difficulty in any of the domains using a four-point scale: 0 (no difficulty); 1 (some difficulty); 2 (a lot of difficulty); or 3 (cannot do at all). This scale is then used to determine whether any reported limitations classify the respondent as disabled.[13]

From the responses to these questions, three binary disability variables were developed. If a person reported some difficulty or more in at least one

domain, they were coded as having a mild disability. Women reporting a lot of difficulty or more in at least one domain were determined to have a moderate disability. Severe disabilities were those reporting "cannot do at all" in at least one domain. Anyone with a severe disability was also included in the moderate and mild disability groups and anyone with a moderate disability was also included in the mild disability group. Each of these three disability variables was analyzed separately.

COVARIATES

In this study there was a crude model and one adjusted model for demographics. Demographics include age (13-49 in five-year groups), parity (no children, 1-3 children, 4 or more children), residence (urban or rural), relationship status (never in a union, currently in a union, formerly in a union), education status (no education, primary school, secondary school, or higher education), and income (measured in quintiles). Covariates were determined based on theory and previous research.[14,15] See Table 1 for more information about these variables.

Data analysis

The data from the DHS in Colombia in 2015 was accessed via the DHS website. Data from the household and women's survey were merged to combine variables from both datasets. Survey settings were created to take clustering, stratification, and weights of the dataset into account as per DHS analysis instructions.[11] Analysis was conducted using Stata version 17.0.[16]

First, descriptive statistics were analyzed to produce counts and percentages for the variables, and to take the survey design into account, weighted percentages were also calculated. Chi-squares were calculated to determine associations between disability and the outcome variables along with logistic regressions to generate odds ratios to determine the significance and directionality of the association between the three disability variables and the reproductive health outcomes mentioned above. The logistic regressions included both a crude model, which only included disability, and an adjusted model to include disability and the relevant covariates.

Ethical considerations

This study was evaluated by the Institutional Review Board at the authors' institution and was determined to be exempt from full board review in accordance with 45 CFR 46 as only de-identified secondary data was used. In addition, informed consent was managed by the in-country DHS data collection teams.

Results

DEMOGRAPHICS

All percentages reported are weighted as per DHS instructions. Counts and unweighted and weighted percentages for demographic variables can be seen in Table 1. The average age of women in this study is approximately 38 years old. In regard to disability status, 29.73% of women were included in the mild disability variable, 8.37% in the moderate disability variable, and 1.39% in the severe disability variable. Approximately 80% of women reported living in an urban area. The majority of women are also currently in a union or living with a man, with 52.31% of women reporting this experience, 31.76% reporting never being in a union, and approximately 16% reporting formerly being in a union or living with a man. Most women received at least some level of education with only 1.38% reporting not having any education at all. Approximately 36% of women reported having received higher education, 47% secondary education, and about 16% primary education.

Table 1: Demographics

	Number	Percent	Weighted Percent
Mild disability	10 168	29.28	29.73
Moderate Disability	28 04	8.07	8.37
Severe Disability	411	1.18	1.39
Age			
15-19	6 298	18.14	16.63
20-24	5 411	15.58	16.09
25-29	4 998	14.39	15.25
30-34	4 897	14.1	14.26
35-39	4 563	13.14	13.24
40-44	4 246	12.23	12.19
45-49	4 312	12.42	12.34
Parity			
No children	9 992	28.77	30.85
1-3 children	20 161	58.06	59.32
4+children	4 572	13.17	9.83
Type of place of residence			
Urban	26 220	75.51	79.74
Rural	8 505	24.49	20.26
Marital Status			
Never in union	10 332	29.75	31.76
Currently in union/living with a man	18 819	54.19	52.31
Formerly in union/living with a man	5 574	16.05	15.93
Highest education level			
No education	692	1.99	1.38
Primary	6 778	19.52	16.03
Secondary	16 776	48.32	46.77
Higher	10 479	30.18	35.82
Wealth index			
Poorest	8 493	24.46	17.03
Poorer	10 414	29.99	20.13
Middle	7 246	20.87	21.14
Richer	5 182	14.92	20.82
Richest	3 390	9.76	20.89

Reproductive Health Frequencies

Of the women surveyed, 25.99% reported female sterilization as their primary form of contraception. The majority of women did use some form of contraception, either modern or traditional. However, 32.91% of women reported no use of contraception at all. The majority of women (59.32%) had between 1 and 3 children, while 30.85% had no children at all, and 9.83% had four or more children. These frequencies can be seen in Table 2.

Table 2: Reproductive Health Frequencies

	Number	Percent	Weighted Percent
Modern Contraceptive Use	22 909	65.97	67.09
Female Sterilization	8 969	25.83	25.99
Long-Acting Reversible Contraceptive	7 705	22.19	21.6
Current Contraceptive Method			
Not using	11 816	34.03	32.91
Pill	2 040	5.87	6.68
IUD	1 092	3.14	4.02
Monthly injection	3 205	9.23	8.79
Male condom	2 325	6.7	6.82
Female sterilization	8 969	25.83	25.99
Male sterilization	565	1.63	2.26
Periodic abstinence	422	1.22	1.37
Withdrawal	739	2.13	2.1
Other traditional	88	0.25	0.13
Implants/norplant	1 965	5.66	5.3
Lactational amenorrhea (lam)	34	0.1	0.08
Foam or jelly	15	0.04	0.03
Patch	1	0	0.02
Injections every 3 months	1 443	4.16	0.04
Vaginal ring	8	0.02	0.02

Bivariate analysis

Chi-square analysis found no significant association between female sterilization and any of the three disability variables. There was also no significant association between any of the three disability variables and age at sterilization or marital status at sterilization. When assessing the association between disability and parity at sterilization, there was no significant relationship found for mild or moderate disabilities, but a significant association was found between parity at time of sterilization and severe disability. See Table 3 for more details for these analyses.

Table 3: Bivariate relationships between women's disability status and contraceptive outcomes, weighted Chi-Squares

	Female Sterilization		Parity at sterilization		Marital Duration at Sterilization		Age at sterilization	
	N=22,909		N=9,534		N=9,534		N=9,534	
	Yes	No	≤2 children	3+ children	Single	Married	<25 years	≥25 years
Mild Disability								
Yes	28.48	30.19	27.24	30.41	28.9	26.97	28.46	28.87
No	71.52	69.81	72.76	69.59	71.1	73.03	71.54	71.13
P-value	0.17		0.09		0.65		0.83	
Moderate Disability								
Yes	8.33	8.16	7.59	8.95	8.18	9.22	8.65	8.14
No	91.67	91.84	92.41	91.05	91.82	90.78	91.35	91.86

P-value	0.22		0.22		0.59		0.64	
Severe Disability								
Yes	1.31	1.45	0.89	1.84	1.38	0.84	1.21	1.39
No	98.69	98.55	99.11	98.16	98.62	99.16	98.79	98.61
P-value	0.69		0.03*		0.46		0.73	

*=p<0.05

Regression analysis

There was no significant relationship found between any of the three disability variables and having a female sterilization procedure in the crude and adjusted models. More detailed statistics for these models can be found in Table 4.

Table 4: Key logistic regression results, female sterilization

	Crude model		Adjusted model	
	OR	95% CI	OR	95% CI
Mild disability	0.92	0.82-1.04	0.92	0.81-1.04
Moderate disability	1.02	0.85-1.24	1.09	0.88-1.35
Severe disability	0.9	0.55-1.49	1.03	0.63-1.69

Discussion

There are limited opportunities to analyze the relationship between disability status and female sterilization in low-and-middle-income countries because there are very low rates of female sterilization in most of these locations. However, use of this form of contraception is common in Colombia, and therefore there is enough statistical power to conduct this research. The finding of no significant differences in sterilization on the basis of disability status is contradictory to findings of other studies in high-income countries.[17–19] It is possible the use of sterilization is so common in Colombia that significant differences on the basis of disability status cannot be identified.

The history of program implementation by Profamilia, the legal battles in Colombia, and the statements of activists imply that the experiences of disabled women related to sterilization are different from non-disabled women, particularly regarding decision making related to sterilization.[4,6] To gain a more comprehensive understanding of how disabled women experience sterilization in Colombia specifically and DHS implementation countries in general, additional questions regarding who made the decision about sterilization and the reason for the sterilization should be added to the DHS Women's Questionnaire. Studies in other parts of the world have found that women with disabilities are not fully informed about the consequences of having a sterilization procedure. The decision is being made by the woman's legal guardian in partnership with their provider, but not including the woman herself in the decision-making process.[20–22] This is even more common when the woman in question has been diagnosed with an intellectual or developmental disability. There appears to be a general assumption among providers and guardians that these women will not be able to comprehend the full impacts of their sterilization procedure, and therefore it is not worth taking the time or effort to explain it to them in language that they would understand.[21–27] This is a violation of informed consent and bodily autonomy, and also violates assent policies that commonly

govern the lives of people with disabilities, placing them in the same legal category as children.

It would also be essential to gain additional information about the timing of the sterilization procedure occurring. While we know the marital status and parity of the woman at the time of her sterilization from the DHS data, we don't know if she was disabled before or after her sterilization took place. The risks of acquiring a disability particularly via illness or injury, increase as a person ages.[28] There is also the possibility that a pregnancy or birth complication, like a prolapse, fistula, or hemorrhage, created the circumstances that required both a sterilization procedure and a disability simultaneously.[29] If a woman elected for a sterilization procedure in her 30s but was only diagnosed with a disability or started experiencing functional limitations in her 40s, it is extremely unlikely her disability or functional limitations had an impact on her sterilization decision making process. However, if a woman began experiencing disability and functional limitations at a very young age or even as a young adult and her sterilization occurred after her diagnosis, there is a higher chance these two variables have a causal relationship.[29]

Limitations

The DHS is a cross-sectional survey that is conducted every five years. A cross-sectional survey does not allow for identifying trends over time and causal relationships cannot be established. Despite the DHS being conducted approximately every five years, a new randomized sample is selected each time. This does not allow for longitudinal analysis and therefore it is only possible to analyze general national trends.[30] Due to the nature of the data collection, it is unknown whether a woman became disabled before or after her reported sterilization procedure. Additionally, there are differing social norms surrounding the definition of disability. Disability is defined differently in different settings which can impact how individuals responded about disability in the survey. Social stigma also exists regarding disability status, which is particularly important to note in terms of proxy reporting. Stigma can reduce the truth of reports about disability status as reported by a proxy and the individual herself.[31] The Colombia DHS team also added additional questions for their disability data collection beyond those in the WG-SS. This limited analysis options and did not allow the researchers to use guidance from the Washington Group regarding analysis methods like creating a disability severity score.[32]

Practice implications

It is important to ensure all women having sterilization procedures are fully informed of the side effects of the procedure and that it removes all potential fertility so they have sufficient information for truly informed consent. It is also necessary to confirm the woman being sterilized is making the decision to have the procedure. This is particularly important for intellectually disabled women because of the extensive history of involuntary sterilizations among these women in many countries around the world.[33–38] Studies have found some reproductive healthcare providers have biased attitudes regarding fertility and disability and encourage sterilization among disabled patients.[39–41] Providers have also reported a lack of training regarding working with disabled women, particularly the unique needs of this population.[40,42–45] Additional training regarding disability should be included during medical education and as part of continuing education. Disability should also be included as part of cultural competency and bias training for medical providers.

Recommendations for future research

Although this study did not find a wide range of statistically significant outcomes, there is a need for future research in regard to disability status and rates of female sterilization among women in Colombia and globally. There is a particular concern regarding

female sterilization among disabled women in Colombia due to the 2014 court case which validated sterilization of minors with intellectual and psychosocial disabilities with consent from their legal guardians.[6] The amendment of the law created in 2010 to protect minors from surgical sterilization for contraceptive purposes has led to many allegations of forced sterilization of minors. It is important to follow the fallout from this decision in order to provide the necessary services to protect disabled women who face the burden of discrimination due to their gender and function limitations.[6]

Conclusion

This study did not identify disparities in use of sterilization as the primary form of birth control on the basis of disability status or significant associations between disability and the timing and situations in which the sterilization took place. However, this does not mean there are no differences between disabled and non-disabled women regarding their experiences of sterilization or the circumstances in which sterilizations occur. Additional research should be done to assess the potential for these issues and training regarding working with patients with disabilities should be included in medical education programs. Similar studies should also be conducted in other countries where female sterilization is a commonly used contraceptive method to determine if there are disparities in those locations.

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The authors have no conflicts of interest to report.

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