

Determinants of LARC Usage in Women in Latin America and the Caribbean

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Ashley Jones

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Mentor: Maria Manriquez, MD

ABSTRACT

Background and significance: Long acting reversible contraceptives (LARCs), which include intrauterine devices (IUDs) and the subdermal implant, are highly effective and have a long-approved duration of use, rendering them both convenient and cost-effective. These attributes suggest that uptake of LARCs would be beneficial for women living in rural areas who may face limitations to family planning services related to distance to healthcare facilities. However, previous studies suggest that living in urban areas or knowing persons who live in urban areas is positively correlated with knowledge about modern contraceptives, including LARCs.

Considering that knowledge about LARCs has been cited as a major determinant for their use, there may be an unmet need for this type of contraception in rural areas. The prevalence of LARC use in the region encompassing Latin America and the Caribbean is of interest for this review as there is still a clear need to address the unmet need for family planning services here. This is evidenced both directly by surveys of women in the region and indirectly by the fact that this region has the highest percentage of maternal deaths due to unsafe abortions globally.

Research question: What is the difference in prevalence of LARCs between women living in urban and rural areas of Latin America and the Caribbean (LAC)? *Methods:* Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) conducted between 2010 and 2015 in LAC countries were reviewed and analyzed to determine difference in prevalence of LARC use between women living in urban versus rural areas. Additionally, a systematic literature review was performed resulting in selection of 11 primary research articles evaluated for LARC prevalence and sociodemographic factors associated with LARC use. *Results:* Both the survey data analysis and systematic review showed a general trend of greater LARC prevalence in urban compared to rural areas. A variety of sociodemographic factors have been correlated with IUD prevalence in these studies. *Conclusions and Impact:* The major trend identified in this two-part review is an overall increased prevalence of LARC use in urban areas compared to rural areas in Latin America and the Caribbean. While a few studies identify factors associated with LARC use, further research may help elucidate these factors.

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INTRODUCTION/SIGNIFICANCE

Background of LARCs

The goal of this review is to analyze the differences in use of long acting reversible contraceptives (LARCs) between urban and rural women in the region of Latin America and the Caribbean. Several studies have been conducted related to the safety and efficacy of LARCs, including intrauterine devices (IUDs) and subdermal implants. These have shown that LARCs are more effective than any other non-permanent contraceptive, including other modern methods of contraception. A prospective cohort study published in 2012 determined that use of contraceptive pills, a transdermal patch, or a vaginal ring among participants was associated with a risk of failure twenty times greater than for those using LARCs¹. Additionally, a comprehensive review published in 2011 that includes information about the effectiveness of LARCs available in the United States shows that each has a failure rate of <1%, placing it in the same tier of efficacy as tubal ligation². Finally, the fact these devices provide effective contraception over a period of five to ten years and generally only require seeing a healthcare provider for insertion and removal means they can be considered more convenient and cost-effective than contraceptives that require more frequent office visits or purchases². For these reasons, LARCs would be an ideal candidate to meet the family planning needs of women living in rural areas. While several studies have identified a relationship between knowledge about LARCs and their use, an article published in *Studies in Family Planning* in 2005 demonstrated that urban women in Guatemala were more likely to be knowledgeable about modern methods of contraception than rural women. Further, this study showed that within a sample of rural women there is increasing knowledge about modern contraceptives with increasing contact with urban populations³. This suggests that the populations of women who may find the use of LARCs most beneficial lack the resources associated with their uptake.

There is a limited number of studies which evaluate the prevalence of LARC use, however, those that are available offer important insights. Common themes affecting LARC use across these studies include patient knowledge about LARCs, accessibility of LARCs, and reproductive history. According to *The Contraceptive CHOICE Project*, approximately two-thirds of study

participants chose either the intrauterine device or subdermal implant for contraception when financial barriers were removed and educational counseling about LARCs was provided⁴. Another study which surveyed family planning providers in Texas identified that prevalence of LARC use was lower in rural areas. This study attributes this difference to differences in provider attitude toward and competency related to LARCs⁵. Finally, a retrospective study evaluating medical records from a tertiary hospital in urban Ghana assessed prevalence of LARCs as well as factors associated with their use. This study showed that 71% of the patients included in the study currently used LARCs, which is much higher than Ghana's national average. Reproductive history was most significantly correlated with current LARC use, particularly the number of living children and previous LARC use⁶. While the number of studies assessing LARC prevalence in a specific population is limited, those that exist provide important information related to factors affecting LARC uptake and use. This serves as the framework for the second portion of this study which will assess determinants of LARC use via a systematic review of the literature.

Maternal Mortality and Unmet Need for Family Planning Services in Latin America

While the maternal mortality rate (MMR) has decreased and contraceptive prevalence has increased throughout Latin America and the Caribbean over the past fifteen years, there is still an unmet need for family planning services in the region. In 2000, the World Health Organization (WHO) set Millennium Development Goals (MDGs) aimed at improving global healthcare and health coverage. The fifth of these goals, MDG5, was to decrease the global maternal mortality rate over the 25 year period from 1990 to 2015. An analysis of the number and causes of maternal death worldwide from the period of 2003-2009 was conducted and published in 2014. This analysis indicates that abortion complications contribute to about 8 percent of maternal deaths worldwide. More interestingly, this study identified the region of Latin America and the Caribbean as having the highest proportion of maternal death due to abortion complications at an average of 9.9 percent for the region. Furthermore, it is noted that these figures may be under-represented due to under-reporting or incorrectly categorizing

deaths, such as not accurately describing a death as a maternal death or failure to identify abortion as the underlying cause of the death. Specifically, this study discusses the fact that maternal death due to unsafe abortion may be misclassified as due to hemorrhage or sepsis⁷.

Modern Contraceptives and Maternal Mortality in Developing Countries

It is widely recognized that family planning services, specifically the use of modern contraceptives, has a positive effect on maternal mortality by reducing the number of pregnancies and births. A 2010 study published in the *Maternal Child and Health Journal* discusses three sets of analyses related to reduction of maternal mortality rates in the developing world from 1990 to 2005. First, the study estimates the number of additional maternal deaths that would have occurred in the timeframe and regions studied had the fertility rate not decreased due to access to and use of contraceptives. This study estimates that the reduced number of births in this time due to decreased fertility rates is responsible for approximately 1.2 million fewer maternal deaths between 1990 and 2005. Second, this study predicted the indirect effect of family planning on maternal deaths by analyzing the decrease in high risk births. A higher percentage of births will have one or more demographic risk factors with lower levels of contraceptive prevalence compared with higher levels of prevalence. Births associated with one or more demographic risk factors decreases from about 70% at low contraceptive prevalence to approximately 35% where contraceptive prevalence is at about 80%. According to this article, this drop is related to the "virtual elimination of high-parity births with multiple risk factors, such as high age/high parity." The data analyzed suggest a decrease in MMRs for 40 countries due to parity redistribution associated with use of contraceptives. The average decrease would be 7.3%, with some ranging to over 35%. This study also analyzed the effect of family planning on age re-distribution of mothers based on contraceptive availability and use but found less significant correlations than for the other two parameters⁸.

Rationale

While the barriers to uptake of modern contraceptives and family planning services in Latin America and the Caribbean have been well studied, there is no current literature analyzing the

difference in prevalence of LARCs between the urban and rural populations of this region. There is evidence of unmet need for family planning services in this region as well as evidence of the safety and efficacy of LARCs. The outcomes of this review, prevalence and determinants of use of LARCs among rural and urban women in Latin America and the Caribbean, may be informative to health policy reform.

MATERIALS AND METHODS

Study Design

Health Survey Review and Analysis:

To identify whether there is a difference in prevalence of LARCs between urban and rural women in Latin America and the Caribbean, data from Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) for countries within this region were used. Surveys conducted between 2010 and 2015 in Latin American and Caribbean countries were analyzed for this review. The DHS and MICS surveys are publicly available for use. First, geographic indicators (urban vs. rural) were compared to prevalence of LARC use at the time of data collection. Prevalence of each individual type of LARC was reviewed and compared to geographic indicators. The chi-square statistic and p-values associated with the difference between LARC use in women living in urban versus rural areas were calculated using the MedCalc statistical calculator at https://www.medcalc.org/calc/comparison_of_proportions.php.

Systematic Review:

Additionally, an exhaustive review of the primary research articles related to determinants of use of LARCs in Latin America and the Caribbean was conducted. The Databases searched were PubMed, EMBASE, POPLINE, WHO Global Index Medicus (formally Global Health Library), and LILACS. The primary outcome extracted from the articles used was current use of a LARC at the time the study was conducted. Independent variables to be extracted and assessed include factors related to demographic information and reproductive history. These include, but are not limited to, urban/rural residence, age, marital status, level of education, number of living children, previous contraceptive use, and age of youngest child. Articles must, at a minimum, report the primary outcome, be available in full text, and be in English to be included. Articles were excluded if they were not primary research articles, did not report current use of a LARC at the time of the study, were not in English, or only reported clinical characteristics and

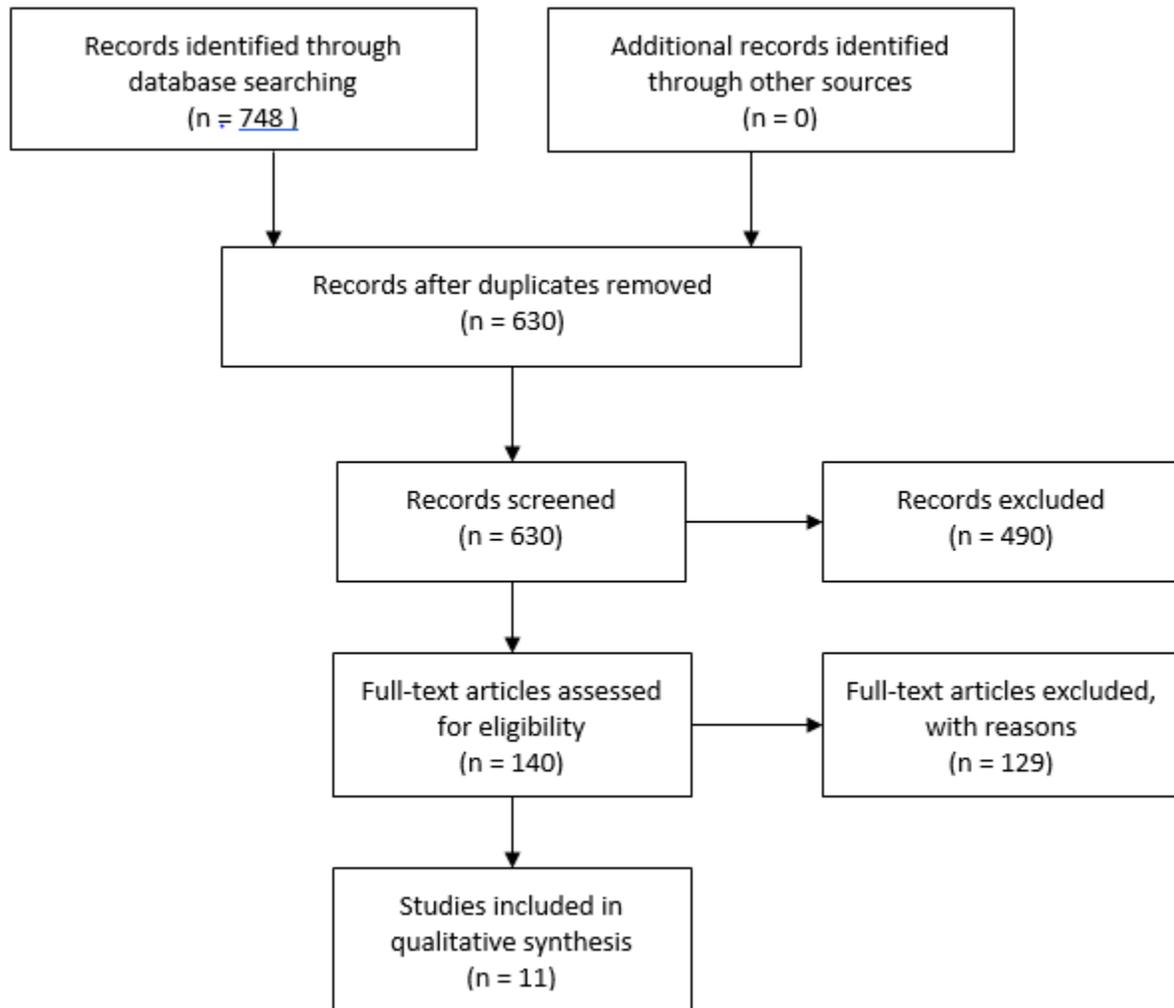
outcomes associated with LARC use. Table 1 describes the search terms and filters used by search engine. Figure 1 shows the article review strategy according to the PRISMA model.

Table 1: Literature Search Engines and Search Terms

Database	Search Terms	Filter(s)	Number of records
EMBASE	"IUD" and "Latin America"	English & Humans	191
EMBASE	"LARC" and "Latin America"	None	15
EMBASE	"Modern contraception" and "Latin America"	None	9
EMBASE	Demographic AND factors AND contraception AND latin AND America	English & Humans	10
EMBASE	Contraceptive AND implant AND Latin AND America	None	8
LILACS	Contraceptive Implant Use	None	12
LILACS	IUD Use	None	30
LILACS	Modern Contraceptive Use	None	12
LILACS	Reproductive history AND Contraception	None	21
POPLINE	"IUD Usage Latin America"	Americas	63
POPLINE	"Reproductive history AND contraception choice"	Americas	60
POPLINE	"Contraceptive Implant Latin America"	Americas	4
POPLINE	"Contraceptive Usage determinants Latin America"	Americas	31
POPLINE	"IUD Usage Latin America"	Americas	63
POPLINE	Demographic factors AND contraceptive choice AND Latin America	Americas	31

Pubmed	("Intrauterine Devices"[Mesh]) AND Latin America	English & Humans	46
Pubmed	"Contraceptive Implant AND Latin America"	English & Humans	17
Pubmed	demographic factors AND contraceptive choice AND Latin America	None	39
Pubmed	Reproductive History AND Contraception AND Latin America	None	89
WHO Global Index Medicus	Demographic Factors AND Contraception Choice	Full text available; North America, South America, Brazil	12
WHO Global Index Medicus	Implant Contraceptive Use Latin America	None	2
WHO Global Index Medicus	IUD Use Latin America	None	5
WHO Global Index Medicus	Modern Contraceptive Use Latin America	None	13
WHO Global Index Medicus	Reproductive health AND contraception choice	Americas	16

Figure 1: PRISMA Flowchart for Article Selection



RESULTS

Health Survey Review and Analysis:

Review of the DHS and MICS surveys conducted since 2010 in Latin America and the Caribbean yields 26 surveys for 18 different countries. Of these, the 2011-2 MICS survey in Argentina could not be used for this study as contraceptive method use is not broken down by urban versus rural residence. Additionally, the 2013 MICS survey in Uruguay and the 2011 MICS survey in Jamaica cannot be used for this study as neither IUD nor contraceptive implant use is reported. Finally, the 2011-2 DHS survey in Honduras and the 2014 MICS survey in Cuba do not report contraceptive implant use and could not be used for that portion of the analysis. Table 2 includes an overview of the surveys used and the percentages of LARC use broken down by urban versus rural residence. The differences between urban and rural use of IUDs and implants are displayed in Tables 3 and 4, respectively, with the associated chi-square statistics and p-values. Figures 2 and 3 show the prevalence of LARC use among reproductive aged women living in urban and rural areas in LAC.

The percent IUD use among women of reproductive age in urban areas of the surveys included ranges from 0.2% (Haiti 2012) to 24.6% (Cuba 2010-2011). The percent IUD use in rural areas ranges from 0% (Haiti 2012) to 25.6% (Cuba 2010-2011). The percent implant use in urban areas ranges from 0.1 % in five surveys to 5.1% (Colombia 2015). The percent implant use in rural areas ranges from 0% in five surveys to 6.4% (Colombia 2015).

The difference between urban and rural IUD use is significant (p-values <0.05) in sixteen surveys covering eleven countries (Belize, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Honduras, Peru, and Suriname). Of these, the prevalence is higher in women living in urban areas for all countries and surveys except the 2014 MICS Guyana survey in which there is a statistically significant higher proportion of IUDs in rural areas (p-value 0.0079). There are five other surveys covering four countries (Barbados, Belize, Cuba, and Sant Lucia) in which the proportion of IUD use is higher in rural areas than urban areas, but the difference is not statistically significant.

The difference between urban and rural contraceptive implant use is significant (p-values <0.05) in eleven surveys including six countries (Belize, Colombia, Dominican Republic, Guatemala, Haiti, and Peru). The prevalence is higher in women living in urban areas in Guatemala and the Dominican Republic. There is a statistically significant higher proportion of implant use in rural areas compared to urban areas in Belize and Haiti (p-values 0.0027 and <0.0001, respectively). The survey results for Colombia and Peru all show significant differences in implant use between women in urban and rural areas though the implant's uptake was higher for urban dwellers until the most recent surveys for each country which shows a higher proportion of implant use in those in rural areas. Additionally, the 2012 MICS survey in Barbados shows a higher proportion of implant use in rural areas compared to urban areas though the difference is not statistically significant.

Table 2: LARC Prevalence in Latin America and the Caribbean

Survey	Population of Women Included	Percent IUD Use		Percent Implant Use		Total n	
		Urban	Rural	Urban	Rural	Urban	Rural
DHS Colombia 2015	Ages 13-49	5.1	3.3	5.1	6.4	14,483	4,749
DHS Colombia 2010	Ages 15-49	7.6	7.1	3.5	2.1	19,540	6,707
DHS Dominican Republic 2013	Ages 15-49	2	0.8	0.5	0.4	3,728	1,337
DHS Guatemala 2014-5	Ages 15-49	2.2	1	2.2	1.7	6,234	8,791
DHS Honduras 2011-2	Ages 15-49	8.8	5	NR	NR	6,254	6,593
DHS Peru 2014	Ages 15-49	2.9	1	0.2	0.5	10,365	3,740
DHS Peru 2013	Ages 15-49	3.2	0.8	0.3	0.1	9,377	3,592
DHS Peru 2012	Ages 15-49	3.6	0.8	0.1	0	9,542	4,082
DHS Peru 2011	Ages 15-49	3.3	1	0.1	0	8769	3904
DHS Peru 2010	Ages 15-49	4	1.5	0.1	0	9062	3977
DHS Haiti 2012	Ages 15-49	0.2	0	0.7	2.7	3430	4378
MICS Belize 2015-6	ages 15-49, married or in union	1.4	1.5	2.2	4.2	1281	1654
MICS Mexico 2015	ages 15-49, married or in union	13.5	11.9	4.3	4	5598	1763
MICS Cuba 2014	ages 15-49, married or in union	23.5	24.7	NR	NR	3911	1274
MICS Dominican Republic 2014	ages 15-49, married or in union	2.9	1.4	1.2	0.5	11233	3900
MICS El Salvador 2014	ages 15-49, married or in union	2.8	1.4	0.2	0.1	4378	2646

MICS Guyana 2014	ages 15-49, married or in union	4.1	6.5	1	1	922	2528
MICS Uruguay 2013	N/A	NR	NR	NR	NR	N/A	N/A
MICS Barbados 2012	ages 15-49, married or in union	2.7	3.8	0.6	1.2	638	360
MICS Saint Lucia 2012	ages 15-49, married or in union	2.7	3.5	0.4	0.2	134	583
MICS Argentina 2011-12	Ages 15-49, married or in union	Contraceptive Method Use not broken down by urban versus rural residence					
MICS Belize 2011	ages 15-49, married or in union	2.2	1.1	0.2	0	991	1395
MICS Costa Rica 2011	ages 15-49, married or in union	3.2	1.4	0.1	0.1	1539	1198
MICS Jamaica 2011	N/A	NR	NR	NR	NR	N/A	N/A
MICS Cuba 2010-1	ages 15-49, married or in union	24.6	25.6	0.1	0	4282	1617
MICS Suriname 2010	ages 15-49, married or in union	2.3	1.1	0.2	0.1	2430	976

Table 3: Difference in Prevalence of IUDs between Urban and Rural Women in Latin America and the Caribbean

Survey	Urban (%)	Rural (%)	Total Urban, n	Total Rural, n	Difference	Chi-square	Degrees of Freedom	p
DHS Colombia 2015	5.1	3.3	14,483	4,749	1.80%	26.103	1	<0.0001
DHS Colombia 2010	7.6	7.1	19,540	6,707	0.50%	1.805	1	0.1791
DHS Dominican Republic 2013	2	0.8	3,728	1,337	1.20%	8.561	1	0.0034
DHS Guatemala 2014-5	2.2	1	6,234	8,791	1.20%	35.596	1	<0.0001
DHS Honduras 2011-2	8.8	5	6,254	6,593	3.80%	72.629	1	<0.0001
DHS Peru 2014	2.9	1	10,365	3,740	1.90%	42.418	1	<0.0001
DHS Peru 2013	3.2	0.8	9,377	3,592	2.40%	60.535	1	<0.0001
DHS Peru 2012	3.6	0.8	9,542	4,082	2.80%	83.478	1	<0.0001
DHS Peru 2011	3.3	1	8769	3904	2.30%	56.505	1	<0.0001
DHS Peru 2010	4	1.5	9062	3977	2.50%	55.14	1	<0.0001
DHS Haiti 2012	0.2	0	3430	4378	0.20%	8.763	1	0.0031
MICS Belize 2015-6	1.4	1.5	1281	1654	0.10%	0.05	1	0.8226
MICS Mexico 2015	13.5	11.9	5598	1763	1.60%	3.011	1	0.0827
MICS Cuba 2014	23.5	24.7	3911	1274	1.20%	0.763	1	0.3824
MICS Dominican	2.9	1.4	11233	3900	1.50%	26.581	1	<0.0001

Republic 2014								
MICS El Salvador 2014	2.8	1.4	4378	2646	1.40%	14.552	1	0.0001
MICS Guyana 2014	4.1	6.5	922	2528	2.40%	7.054	1	0.0079
MICS Uruguay 2013	NR	NR	N/A	N/A				
MICS Barbados 2012	2.7	3.8	638	360	1.10%	0.927	1	0.3356
MICS Saint Lucia 2012	2.7	3.5	134	583	0.80%	0.215	1	0.6428
MICS Argentina 2011-12								
MICS Belize 2011	2.2	1.1	991	1395	1.10%	4.572	1	0.0325
MICS Costa Rica 2011	3.2	1.4	1539	1198	1.80%	9.269	1	0.0023
MICS Jamaica 2011	NR	NR	N/A	N/A				
MICS Cuba 2010-1	24.6	25.6	4282	1617	1%	0.628	1	0.4281
MICS Suriname 2010	2.3	1.1	2430	976	1.20%	5.227	1	0.0222

Table 4: Difference in Prevalence of Contraceptive Implants between Urban and Rural Women in Latin America and the Caribbean

Survey	Urban (%)	Rural (%)	Total Urban, n	Total Rural, n	Difference	Chi-square	Degrees of Freedom	p
DHS Colombia 2015	5.1	6.4	14,483	4,749	1.30%	11.788	1	0.0006
DHS Colombia 2010	3.5	2.1	19,540	6,707	1.40%	32.154	1	<0.0001
DHS Dominican Republic 2013	0.5	0.4	3,728	1,337	0.10%	0.209	1	0.6478
DHS Guatemala 2014-5	2.2	1.7	6,234	8,791	0.50%	4.873	1	0.0273
DHS Honduras 2011-2	NR	NR	6,254	6,593				
DHS Peru 2014	0.2	0.5	10,365	3,740	0.30%	8.872	1	0.0029
DHS Peru 2013	0.3	0.1	9,377	3,592	0.20%	4.257	1	0.0391
DHS Peru 2012	0.1	0	9,542	4,082	0.10%	4.085	1	0.0433
DHS Peru 2011	0.1	0	8769	3904	0.10%	3.906	1	0.0481
DHS Peru 2010	0.1	0	9062	3977	0.10%	3.979	1	0.0461
DHS Haiti 2012	0.7	2.7	3430	4378	2%	43.014	1	<0.0001
MICS Belize 2015-6	2.2	4.2	1281	1654	2%	8.975	1	0.0027
MICS Mexico 2015	4.3	4	5598	1763	0.30%	0.298	1	0.5852
MICS Cuba 2014	NR	NR	3911	1274				
MICS Dominican	1.2	0.5	11233	3900	0.70%	14.055	1	0.0002

Republic 2014								
MICS El Salvador 2014	0.2	0.1	4378	2646	0.10%	1.017	1	0.3131
MICS Guyana 2014	1	1	922	2528	0%	0	1	1
MICS Uruguay 2013	NR	NR	N/A	N/A				
MICS Barbados 2012	0.6	1.2	638	360	0.60%	1.022	1	0.312
MICS Saint Lucia 2012	0.4	0.2	134	583	0.20%	0.184	11	0.6681
MICS Argentina 2011-12								
MICS Belize 2011	0.2	0	991	1395	0.20%	2.791	1	0.0948
MICS Costa Rica 2011	0.1	0.1	1539	1198	0%	0	1	1
MICS Jamaica 2011	NR	NR	N/A	N/A				
MICS Cuba 2010-1	0.1	0	4282	1617	0.10%	1.618	1	0.2034
MICS Suriname 2010	0.2	0.1	2430	976	0.10%	0.407	1	0.5235

Figure 2: IUD Prevalence Among Reproductive Aged Women in LAC

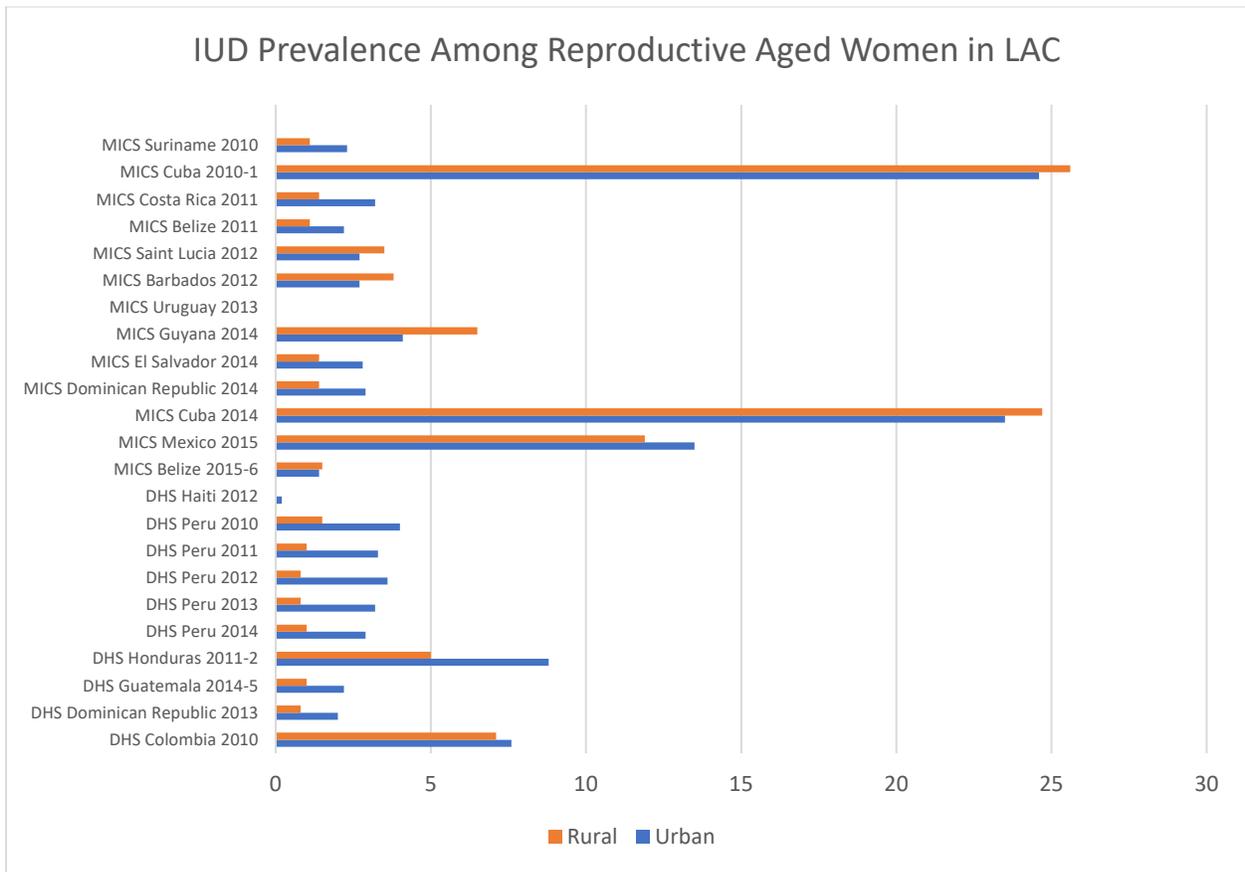
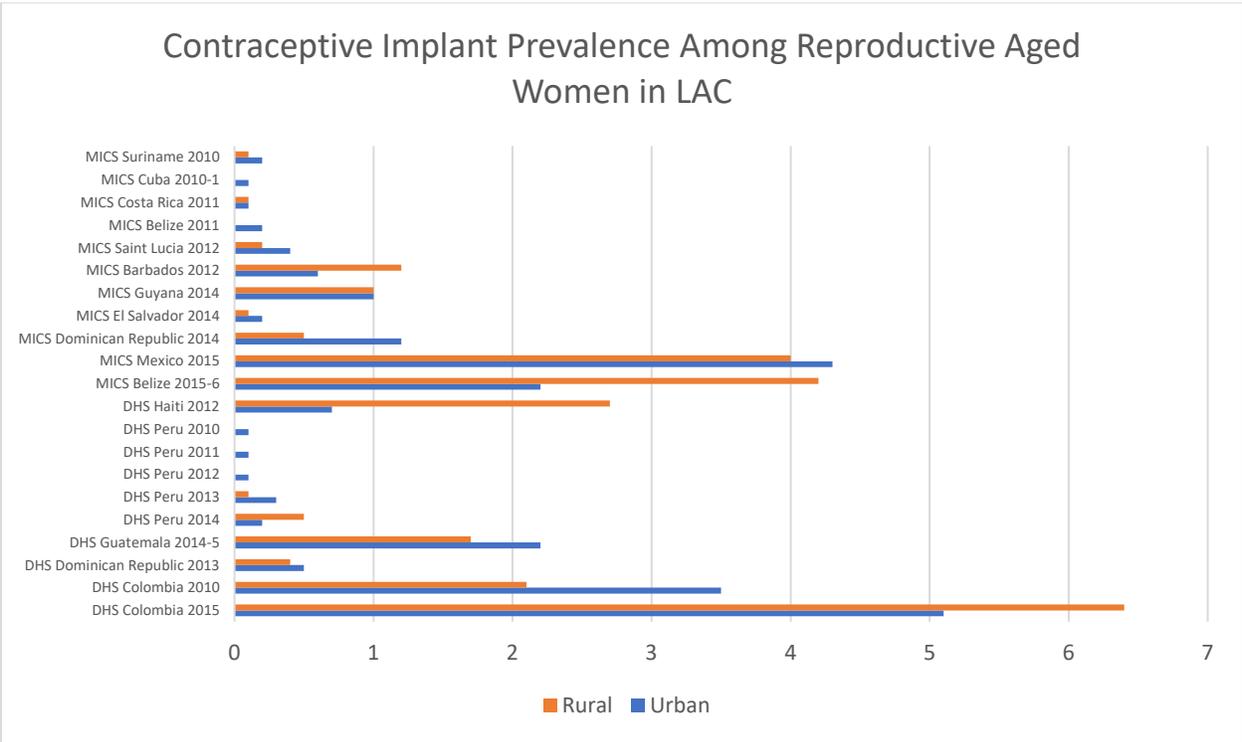


Figure 3: Contraceptive Implant Prevalence Among Reproductive Aged Women in LAC



Systematic Review:

An exhaustive literature search as described in the Methods section above resulted in eleven articles meeting the inclusion criteria. These articles and the outcomes of interest are described in Table 5 below. The proportion of the populations studied currently using an IUD ranges from 1% to 96.5%, however the study with the highest proportion of IUD users only included women currently using a LARC. Excluding this study, the highest IUD prevalence reported is 42.3% (general population of Mexican females) and 35.8% in postpartum adolescents in Mexico City. Three papers report ever-use of an IUD in the study population ranging from 11.1% to 19%. The study that only includes current LARC users is the only study identified in this review that reports current use of a contraceptive implant.

The study by McDonald-Mosley R et al reports factors associated with IUD acceptability. This study included women living in one rural and one urban area in El Salvador. It found that living in the rural area, Arcatao, is associated with increased IUD acceptability (OR 6.2). It also showed that current use of any type of contraception is associated with IUD acceptability (OR 3.0).

Ferreria JM et al identify reasons for switching to a LARC in a population of women in Campinas, Brazil. The most commonly reported reasons for switching to a LARC include fear of becoming pregnant (59.1%), that a LARC is an easy to use method (24.3%), and fear of forgetting to take the pill (22.7%). Other reasons for switching to a LARC include dissatisfaction with side effects of other contraceptive methods and partner disapproval of other methods.

A few of the studies included in this review describe sociodemographic factors of current IUD users. Ortiz-Ortega A et al identify a large difference in IUD prevalence among first year medical students in Mexico City compared to the general population of Mexican women (1% versus 42.3%). Zelaya et al describe IUD use in terms of residence, education completed, and wealth. In this population in Leon, Nicaragua, IUD prevalence is higher in urban versus rural areas (19% versus 11%), with higher levels of education, and with greater wealth. Monteith RS et al also report a higher percentage of IUD use in a metro area compared with the more rural interior of the country (10.4% versus 3.1%).

Two of the studies included review disadvantages and barriers to use of family planning including IUDs. Van den Brink MJ et al demonstrates a discrepancy between ever-use of an IUD and IUD use within the past 6 months and reports cited disadvantages of IUD use including increased menstrual fluid and pain during menstruation which were both associated with use of the copper IUD. Hall MG et al also show a discrepancy between ever-use and current use of an IUD in a population of women living in rural Honduras. This paper identifies the barriers to use of family planning services including side effects, misperceptions about health effects, men's attitudes toward family planning, and structural obstacles (difficulty accessing the services due to rural living).

Predictors of nonuse of the IUD is reported by Atkin LC et al in a group of adolescents who had postpartum IUDs placed. Nonuse of the IUD five months after delivery is associated with leaving school before pregnancy (OR 3.5), low partner support (OR 5.74), and not having an IUD at the time of hospital discharge.

Table 5: Overview of Articles and Outcomes

Article	Study Location	Population	Study Design	Primary Outcomes	Other
Abortion, contraceptive use, and adolescent pregnancy among first-year medical students at a major public university in Mexico City Ortiz-Ortega A et al.	Mexico City, Mexico	120 first year medical students, ages 15-24, who have ever been sexually active	Cross-sectional	IUD prevalence: 1% General population of Mexican females: 42.3%	
Acceptability of the intrauterine device among women in El Salvador McDonald-Mosley R et al.	Arcatao (rural) and Cojutepeque (urban), El Salvador	187 women ages 15-40	Cross-sectional	IUD prevalence: 2.1%	Factors associated with IUD acceptability: Living in Arcatao (OR 6.2) Currently using contraception (OR 3.0)
Attitude toward contraception and abortion among Curacao women. <i>Ineffective contraception due to limited sexual education?</i> Van den Brink MJ et al.	Curacao	146 women ages 15-45	Cross-sectional	IUD use past 6 months: 4.9%	IUD ever-use: 19% Reported disadvantages with IUD: increased menstrual fluid, pain during menstruation

Barriers to modern contraceptive use in rural Peru Maynard Tucker G	Markita and one other smaller community (rural), Peru	54 couples; women ages 15-49	Cross-sectional	Current IUD use: 5/54 (9.3%)	IUD ever-use: 6/54 (11.1%)
Contraceptive patterns among women and men in Leon, Nicaragua Zelaya E et al.	Leon, Nicaragua	10,867 women ages 15-49; 413 women and 388 men ages 15-49; Those over 44 years excluded as menopausal situation had not been asked	Cross-sectional	IUD prevalence: 16%	Urban living IUD prevalence: 19% Rural living IUD prevalence: 11% Less than primary education complete IUD prevalence: 5% At least primary education complete IUD prevalence: 28% Non-poor IUD prevalence: 24% Poor IUD prevalence: 22% Extremely poor IUD prevalence: 10%
Contraceptive use and fertility in Paraguay, 1987 Monteith RS et al.	Paraguay	2,224 women ages 15-44	Cross-sectional	Proportion using IUD: 5.1%	Percentage in Asuncion (metro) using IUD: 10.4% Percent in interior using IUD: 3.1%

Post family planning experience in the Caribbean: St. Kitts-Nevis and St. Vincent Baily J et al	St. Kitts-Nevis and St. Vincent	3,622 (St. K-N) and 4,445 (St. V) women accepting family planning	Retrospective cohort	Proportion of IUD acceptors: St. K-N: 19% St. V: 10%	IUD continuation rate at 12 months: St. K-N: 76% St. V: 70%
Postpartum contraceptive use and unmet need for family planning in five low-income countries Pasha O et al.	Rural Guatemala	Women using any modern CM	Cross-sectional	IUD Prevalence: 3%	
Pregnant again? Psychosocial predictors of short-interval repeat pregnancy among adolescent mothers in Mexico City Atkin LC et al.	Mexico City (urban), Mexico	26 adolescents with short-interval repeat pregnancy (out of 137 adolescents)	Prospective cohort	Postpartum IUD placement: 49/137 (35.8%)	Predictors of Nonuse of IUD at 5 months: Leaving school before pregnancy (OR 3.5) Low partner support (OR 5.74) No IUD at hospital discharge (OR 3.71)
Reasons for Brazilian women to switch from different contraceptives to long-acting	Campinas Brazil	1167 Women ages 18-50 using CM and wishing to switch to LARC (1154 at f/u)	Prospective cohort	Percent choosing copper IUD: 60.4% Percent choosing	Reasons for switching to LARCs: Fear of becoming pregnant (59.1%)

<p>reversible contraceptives</p> <p>Ferreria JM et al</p>				<p>LNG-IUS: 36.1%</p> <p>ENG implant: 3.5%</p>	<p>LARC is an easy method to use (24.3%) Fear of forgetting to take the pill (22.7%) LARC is more cost-effective (4.3%) Partner disapproval (2.4%) Nausea/vomiting (16.7%) Bleeding abnormalities (14.6%) Weight gain (13.9%) Headache (11.8%) Other (20.1%)</p>
<p>La situacion economica: social determinants of contraceptive use in rural Honduras</p> <p>Hall MG et al</p>	<p>Rural Honduras</p>	<p>29 women 18 years and older in rural Honduras; 21 interviews, 2 focus groups</p>	<p>Cross-sectional</p>	<p>Current use of IUD: 1/29 (3.4%)</p>	<p>Ever use of IUD: 5/29 (17.2%)</p> <p>Barriers to family planning use: Side effects (weight gain, weight loss, headaches, nausea, facial paralysis)</p> <p>Misperceptions about health effects</p> <p>Men's attitudes toward family planning</p>

					Structural obstacles (Seeking IUD or sterilization, must visit public hospital or PP clinic in Choluteca)
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DISCUSSION

The overall percent IUD use from the DHS and MICS surveys ranges from 0% to 25.6% whereas the range of percent IUD use in the study populations, excluding the study solely including current LARC users, is 1% to 42.3%. The upper limit reported in the studies is cited as the general population of Mexican females. However, this differs largely from the results of the 2015 MICS survey in Mexico showing that 13.5% of urban and 11.9% of rural women in the country currently use an IUD. This difference could be due to changes in contraceptive method trends in the country as the study by Ortiz-Ortega A et al reports IUD use of the general population of Mexican females from 1997. Additionally, this study reports percentages only of women who have ever used contraception rather than all women of reproductive age. Despite potential explanations for this difference, this illuminates the fact that contraceptive method use is an evolving metric that can only be captured within a sample population at any given moment in time. The overall percentage of contraceptive implant use reported in the DHS and MICS surveys ranges from 0% to 6.4%. Only one study identified in the systematic review reports implant use and this is the study including only women who had switched to a LARC method. Reviewing the survey results highlights that Cuba has a much higher proportion of IUD users than other countries included in both rural and urban populations. The reasons that this population is an outlier are not evident from this study; country specific factors such as the health system, funding for family planning, and attitudes towards LARC use may contribute to this difference.

There are a few general trends identified in this review. First, most of the study populations (including surveys and papers identified in the systematic review) show that IUD use is more prevalent in women living in urban areas compared to women in rural areas. None of the articles in the systematic review reported a higher percent IUD use in women living in rural areas compared to urban areas. Of the surveys included in this review, only six surveys of five countries report a higher percent of IUD users in rural versus urban areas and only one of the 2014 MICS survey in Guyana showed a statistically significant difference. One potential contributing factor is that the representative samples included in this survey show a higher population overall living in rural compared to urban areas.

Trends in contraceptive implant use in urban versus rural areas are similar to trends in IUD use. While none of the studies identified in the systematic review report differences between urban and rural use of the contraceptive implant, the DHS and MICS surveys show that the percent implant use is higher in urban areas versus rural areas for most of the populations studied. There are five surveys of five countries showing a higher percent implant use in rural areas and four of these show a statistically significant difference. The 2012 DHS in Haiti and the 2015-2016 MICS in Belize show a higher number of rural women than urban women in the study population. The other two surveys with a significant difference, the 2015 DHS in Colombia and the 2014 DHS in Peru, are especially interesting because they are only the most recent of multiple surveys conducted in these countries included in this review. For both countries, the previous DHS surveys show statistically significant higher proportions of implant users in urban areas. The fact that the most recent surveys show a statistically significant higher proportion of implant use in rural areas may indicate decreased barriers to use of the implant in rural areas of these countries. Finally, the percent of IUD users tends to be higher than the percent of implant users in most countries included in the surveys. There are four exceptions to this (Colombia, Guatemala, Haiti, and Belize).

In addition to identifying differences in prevalence of LARC use in urban versus rural areas, this review aimed to identify sociodemographic factors associated with LARC use in Latin America and the Caribbean. Through the review process, it was noted that there is very little current literature that specifically addresses this. Many of the articles related to LARC use in this region were related to clinical outcomes rather than identifying factors associated with using LARCs. There was especially limited evidence related to use of the contraceptive implant. Of the articles identified, a few trends were observed. First, multiple articles reported both current IUD use as well as IUD ever use. It is unsurprising that ever-use was reported at higher rates than current use as this would be expected to be a larger population; however, only one of the studies reporting these two outcomes shows that a higher proportion of the ever-users continue to use an IUD compared to those who discontinue the method. This study covered a rural population in Peru. Women from different regions may have different reasons for IUD discontinuation, which could include accessibility of a health care professional, cultural

acceptability of the IUD, and tolerance of side effects. Finally, this review identifies some sociodemographic factors associated with IUD use, however, the only factor that was reported in more than one paper was geographic residence. As mentioned previously, all the studies identified in the systematic review reporting this metric showed a higher proportion of women living in urban areas using IUDs compared to those in rural areas which is consistent with the overall trends in the survey data.

FUTURE DIRECTIONS

This study has identified several areas of opportunity for future research, including a general lack in primary research of sociodemographic factors associated with LARC use in Latin America and the Caribbean. Specific areas of interest for further study include identifying country-specific factors associated with exceptionally high LARC use compared to other countries in the region. The most striking example of this is Cuba. While percent IUD use is higher for most countries and while there is much more literature related to IUD use compared to implant use, review of survey data identified that Colombia, Guatemala, Haiti, and Belize have higher rates of implant use compared to IUD use. Further research could identify if there are differences such as specific family planning programs, funding for implants, or acceptability of implants compared to IUDs compared to other countries in the region. Additionally, longitudinal trends in rural uptake of the contraceptive implant as there were more areas identified with significantly higher proportions of rural implant use than for IUD use. The fact that two of the studies with a higher use of implants among rural women were in countries that had previously shown a higher implant prevalence in the urban areas suggests that something has changed to either increase acceptability or decrease barriers to implant use in these rural areas.

CONCLUSION

The major trend identified in this two-part review is an overall increased prevalence of LARC use in urban areas compared to rural areas in Latin America and the Caribbean. While a few studies identify factors associated with LARC use, further research may help further elucidate these factors. Understanding the differences in specific populations that have higher proportions of LARC use and in those where more women living in rural areas use LARCs may help lay the foundations for understanding current barriers in most of the region.

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COMPREHENSIVE REVIEW

Introduction

Family planning services can greatly impact population health. Access to and attitudes regarding various family planning services vary widely among different cultures and regions. Latin America and the Caribbean includes both developed and developing countries and demonstrates unmet need for family planning services. This review identifies the currently available literature addressing contraceptive method use and family planning services in the region.

Contraception Use in Latin America

Many studies have shown various trends in contraceptive use among developing countries and Latin American countries. A study using Demographic and Health Surveys (DHS) of women aged 15-24 from eight Latin American countries shows a trend in increased contraception over time for all countries in the study except the Dominican Republic¹. Another study of this region from 1992-2012 showed increased contraceptive prevalence over time, particularly with an increase in short acting methods². Data from Honduras from 1981 to 1984 shows increasing contraceptive use, particularly in female sterilization, with the greatest changes occurring in rural areas³. Current use of modern contraception is positively correlated with greater beliefs in gender equality in adolescents in Bolivia and Ecuador⁴. Decreased prevalence of contraceptive use was shown to be associated with younger age, young age at first relationship, living in a rural area, and having negative opinions about having sex in relationships in a group of Nicaraguan adolescents⁵.

There are several documented differences in contraception use and socioeconomic status. Analysis of data from Demographic and Health Surveys from 55 developing countries shows that there is a significant disparity in rates of use of modern contraceptives between those living in poverty and those living at national averages, with Latin America showing the greatest inequality in use rates⁶. Sinai and colleagues showed that for those using fertility awareness based methods of family planning, higher income is associated with having intercourse on fertile days and higher housing quality is inversely related to likelihood of having intercourse on fertile days⁷. Survey of adolescents in poor neighborhoods in Managua, Nicaragua showed that only 54% of girls and 43% of boys who are sexually active use a type of modern contraception⁸.

Contraceptive nonuse and discontinuation has been explored by many. A 1984 study of three Asian and three Latin American countries identified age of the women, number of living children, and previous use of family planning methods as the most significant factors related to contraception nonuse. This study also showed considerable disapproval of contraceptives in Colombia and Costa Rica⁹. A study based on DHS surveys of eight Latin American countries sites method dissatisfaction as the most common cause for contraceptive method discontinuation¹.

Contraception Methods:

LARCS: IUDs, Implants

Use of LARCs varies significantly among different groups within this region. Multi-region studies have shown high satisfaction with contraceptive implants¹⁰. Among adolescents living in poor neighborhoods of Managua and reporting use of a modern contraceptive, 4% report using IUDs and 0.3% report using implants⁸. One study conducted in Mexico City showed that first year female medical students had a much lower prevalence of IUD use than the general population of Mexican females in the same age group (1% versus 42.3%)¹¹.

Barriers to use of intrauterine devices (IUDs) include patient factors as well as provider and system factors. One study of a copper IUD suggests that barriers to use of the IUD likely contributes more to its low prevalence in Latin America than its clinical acceptability and performance¹². In four Latin American countries, misperceptions about this type of contraception including information relating to adverse effects and its indications for use contributed to nonuse¹³. Provider knowledge and practices related to IUDs can also act as a barrier to IUD use. One survey of 210 obstetricians and gynecologists from twelve Latin American countries who provide contraception services showed that many of the providers had lack of knowledge or discrepancy between knowledge and practice related to IUDs. About 80% of the group reported not offering IUDs to nulligravidas even though most recognize there is no contraindication. Additionally, about 10% of the group did not recognize how effective LARCs are¹⁴. A study assessing health care providers knowledge of the WHO Medical Eligibility Criteria for contraceptive use was insufficient in four regions including Latin America¹⁵.

Across multiple sites, including some in Latin America, reasons for discontinuation of the copper IUD include expulsion, bleeding or pain, and personal reasons¹⁶. A study of the TCU 380A copper IUD in six different Latin American facilities showed that the overall discontinuation rate during the study is comparable to other countries, but showed a significant difference in discontinuation rates among the different clinics¹². Reported disliked features of the contraceptive implant in women from multiple regions including Latin America include bleeding irregularity¹⁰. Discontinuation rates of the Norplant implant in a multi-center study

including Latin American centers varied from 35.8 to 60 per 100 women and was associated with lower age and parity¹⁷.

Other Hormonal Methods: Pill, Patch, Ring, Injection

Studies have shown high tolerance of various oral contraceptives among women in Latin America¹⁸. Among adolescents living in poor areas in Managua and reporting using of a modern contraceptive, hormonal injections and oral contraceptives are reported at the highest rates⁸.

A clinical study of a monthly injectable contraceptive in six Latin American countries showed that while this was an effective method of contraception, the discontinuation rate at one year was 17.9% with the most common reasons for discontinuation cited as bleeding problems and amenorrhea¹⁹.

Barrier Methods

Barrier methods are used by many groups in Latin America and the Caribbean. In adolescents in Nicaragua using some type of modern contraception, consistent condom use is associated with males identifying as Catholic or who report never feeling pressure to have sexual intercourse⁸. Among first-year medical students in Mexico City, use of condoms and other barrier methods was much higher than the general Mexican female population of the same age though this may be related to the decreased prevalence of IUDs among the medical student¹¹. A study of sex workers in Mexico and the Dominican Republic show that strategies that increased successful condom use including having them available, emphasizing positive aspects of condoms, and eroticizing condom use. Further, condoms are seen to offer protection and security²⁰. Compared with counterparts from the US, Latin American subjects had higher rates of discontinuation of the female condom though both groups cite accidental pregnancy and personal reasons as causes of discontinuation²¹. There are few studies regarding use of spermicidal foam in Latin America, but one from 1961 in a low income urban area of Puerto Rico showed relatively high acceptability of this method of contraception with no differences in acceptability based on religion²².

Natural Family Planning & Lactational Amenorrhea

Higher income is associated with poorer adherence to fertility awareness based methods of family planning while higher housing quality is associated with better adherence⁷. Compared to the general female population in Mexico, first-year medical students were much less likely to use natural family planning methods¹¹. This suggests that education about reproductive health may lead persons to choose more effective methods of contraception whereas socioeconomic status may not play as much of a role.

Emergency Contraception

Knowledge about and acceptability of emergency contraception (EC) varies among Latin Americans but seems to improve with educational interventions. A survey of women at a family planning clinic in Buenos Aires showed low levels of awareness that the copper IUD could be used as EC at baseline, though its acceptability as EC was high. Following an educational intervention, those with previous use of an IUD who identified as Argentine were more likely to consider the copper IUD as EC²³. Multiple studies have shown that educational interventions increase awareness of and acceptability of EC in this region. For example, increased knowledge regarding EC pills following multifaceted educational interventions was seen in a group of women working in manufacturing in Tijuana, Mexico²⁴. An NGO-led outreach program in Honduras from 2011-2003 resulted in increased awareness of EC from 5% to 20%. Younger age, higher education level, and residence in Tegucigalpa were positively associated with knowledge and acceptability of EC²⁵. A three-year program in Mexico City targeting healthcare providers and the public resulted in increased awareness and acceptability of EC by family planning clinic clients as well as improved EC method recognition by providers²⁶.

Despite the evidence that educational interventions improve acceptability and awareness of EC in Latin America and the Caribbean, EC may not be widely available. Data from surveys conducted by 37 International Planned Parenthood Federation affiliates in LAC showed that most institutions offered at least one form of EC, with respondents from the Caribbean making up a large portion of the group that does not provide EC. However, dedicated EC products were only available in four countries at the time of the survey and an additional seven between

survey data collection and publication of the study. Of the affiliates not offering EC, 79% cited the belief that it constitutes abortion as a reason²⁷.

Vasectomy

Vasectomy has been shown to have high satisfaction rates even among studies of Latin American men²⁸. However, the rate of vasectomy has still been shown to be lower among groups living in Latin America compared to the United States, even among ethnically similar groups²⁹.

Female Sterilization

Data compiled from the UN have shown that female sterilization is the most commonly used contraceptive in Latin America and the Caribbean³⁰. Multiple studies have shown increasing trends in female sterilization among various countries in the region. The rates increased from 1995-1996 in Brazil and Peru³¹. Compared with Puerto Rican women living in the United States, those living in Puerto Rico had higher rates of female sterilization²⁹. In Honduras from 1981 to 1984, female sterilization was the main contribution to increasing contraceptive use, especially in rural areas³.

Sociodemographic factors may affect likelihood of pursuing female sterilization in Latin America and the Caribbean. A study assessing Brazil, Colombia, the Dominican Republic, and Peru from 1995-1996 showed that higher levels of education were associated with increased likelihood of sterilization in all countries³¹. This suggests women with higher levels of education may be seeking very effective methods of contraception. Further, in six countries including Colombia, El Salvador, and Guatemala, surveys of women undergoing sterilizations from 1984-6 showed that women made voluntary decisions and had knowledge of other methods of contraception. However, this study identified gaps in the survey respondents' knowledge of risks of sterilization and in pre-procedure counseling³². Living in Tegucigalpa compared to the more rural San Pedro Sula is associated with higher rates of sterilization among women desiring the procedure, with "financial and time constraints" cited as major factors for not having the procedure³³.

As a permanent procedure, regret is a risk of sterilization procedures. One case control study from Brazil showed that sterilization regret was correlated with younger age at time of the procedure, having less knowledge of the procedure, and having less knowledge of alternative contraceptive methods before electing sterilization³⁴. This highlights the importance of comprehensive and non-judgmental contraception counseling.

Education

Education and Contraceptive Use

Multiple associations between level of education and contraceptive practices have been shown in this region. Overall, higher levels of education are associated with greater knowledge about and use of effective contraceptive. For example, Paraguayan women with higher levels of education are less likely to use herbs called “yuyos” for contraception³⁵. Lower levels of education have been shown to be inversely associated with likelihood of exposure to family planning communications in Guatemala, El Salvador, and Panama³⁶. A study including women in Brazil, Colombia, the Dominican Republic, and Peru showed a positive association between levels of education and female sterilization³¹. Finally, Pichardo et al showed that lower levels of education are associated with decreased knowledge about emergency contraception whereas higher levels of education are associated with having more information about the IUD²³.

Education/Interventions

In addition to improved knowledge and acceptability of emergency contraception, as discussed previously, educational interventions have been shown to increase quality contraception counseling and access to effective contraception methods. Providing training about postabortion contraceptive counseling to physicians in 22 public hospitals in Guatemala resulted in increased rates of counseling about unsafe abortions and contraception for patients admitted with postabortion complications. Additionally, there was a marked increase in women discharged from one of these hospitals with an effective contraceptive³⁷. In Managua, Nicaragua, implementation of a voucher program offering free access to sexual and reproductive healthcare for adolescents and involved training participating physicians resulted in increased scores in physicians’ knowledge of contraceptives and STIs and a significant decrease in barriers to contraceptive use³⁸. Ensuring that health care providers have up-to-date information about contraception and effective methods of counseling about family planning services can increase access to and prevalence of effective contraception.

Abortion

Abortion in Latin America and the Caribbean is common yet controversial. The subject is so taboo that one study evaluating maternal deaths in Mexico showed a 100% underestimation of abortion related maternal deaths as no deaths were officially attributed to be related to abortion despite evidence indicating otherwise³⁹. One consequence of this attitude toward abortion is an increase in unsafe abortions. Based on 2000 figures, it is estimate that about 3.7 million unsafe abortions occur annually in Latin America and the Caribbean⁴⁰. Estimates of health care system costs of unsafe abortion shows that abortion care carries significant annual costs to the health care systems in Latin America⁴¹.

In addition to low acceptability among women in LAC, abortion has been and still is illegal in many countries. Some studies have shown that even when the procedure remains illegal, women still seek abortions and access to safe abortion methods decreases the number of unsafe abortions. The introduction of misoprostol to the Brazilian market was associated with reducing complications due to unsafe abortions in the country where abortions were illegal⁴². Another study showed that of women presenting with abortion complications in Rio de Janeiro, Brazil in 1991, over half had used misoprostol with the most common reasons for seeking medical care being vaginal bleeding and cramping. There were far fewer serious complications such as infection or injury in women who attempted abortion by medication compared to those using catheter insertion⁴³.

While acceptability of abortion in general is low in Latin America and the Caribbean, medical abortion is likely more acceptable in the region. A qualitative study of women receiving medical abortion in four Latin American countries (Mexico, Colombia, Ecuador, and Peru) showed that medical abortion was thought to be “less painful, easier or simpler, safer or less risky”. Overall, the women found this method acceptable and reported that the lower cost compared to surgical abortion affected their decision making. Nearly half of the participants viewed the procedure as a type of menstrual regulation or similar to menstruation. Rural Mexican women stated difficulty in access to pills was a disadvantage. More negative views taken by those requiring surgical interventio⁴⁴. Acceptability of medical abortion over surgical abortion was

also demonstrated in Winikoff's study of participants from multiple countries including Cuba⁴⁵. Evaluation of language-specific use of a website offering information about medication abortion showed that the website was accessed most often in English followed by Spanish. Further, those accessing the Spanish language version tended to access the section "misoprostol-only" at a much higher rate compared to all other language versions⁴⁶. Despite greater acceptability of medical abortion than surgical abortion in the regions, the sale of misoprostol and misoprostol-NSAID combined drugs is low in Latin America compared to most other regions and decreased from 2002-2007⁴⁷.

In a poor urban region of Brazil, one study conducted from 1992-3 showed that induced abortion was associated with younger age, single marital status, fewer living children, and history of induced abortions. However, there was no association between therapeutic abortion and religion⁴⁸. Another study comparing first year female medical students to the general population of Mexican females aged 15 to 24 showed a much lower prevalence of abortion in the medical student group¹¹. Decreased access to family planning services is associated with increased attempted abortion. One study showed increased use of "pseudo-abortifacients" in Asuncion, Paraguay following closure of government funded family planning⁴⁹.

Interactions between women in LAC and the health care system impacts their knowledge of family planning services including abortion. Interviews with healthcare practitioners, pharmacists or pharmacy staff, and lay women in Latin America were conducted and showed that most viewed physicians as the best source of information about abortion, and that there was a general lack of knowledge about misoprostol and medical abortions⁵⁰. A study evaluating the use of Safe Abortion Information Hotlines (SAIH) in five Latin American countries (Argentina, Chile, Ecuador, Peru, and Venezuela) showed that the hotlines had a "positive impact on access to safe abortions for women whom they help"⁵¹. Surveys of obstetrician-gynecologists in Brazil about abortion indicated low level of accurate knowledge about abortion law (48%) and high levels reporting beliefs that laws should be more relaxed. About 1/3 cited previous experience performing abortions but few had experience with common current safe methods such as manual vacuum aspiration, misoprostol, and misoprostol with methotrexate⁵².

Religion and Family Planning Services/Contraception Method

While religion is often cited by individuals as a factor associated with contraceptive method choice, the literature shows mixed evidence that religion plays a major role family planning and contraceptive method choice. For example, one study showed that among adolescent males in Managua, more consistent condom use is associated with identifying as catholic⁸. On the other hand, a qualitative study of Norplant users in multiple countries including the Dominican Republic showed women from all countries reported that the decision to practice family planning was not influenced by religion⁵³. Additionally, prior to legalization of abortion in Mexico, a survey of Mexicans aged 15-65 showed that the majority felt abortion should be legal in some circumstances and that many Mexican Catholics believed abortion legislation should not be influenced by the Church or personal religious beliefs of lawmakers⁵⁴. While religion may play a role in personal beliefs about various family planning services, it is not invariably a determinant of contraceptive method choice or opinion on family planning policy in Latin America and the Caribbean.

Socioeconomic Status and Contraception

Socioeconomic status and financial assistance have been shown to be associated with increased use of effective contraception methods. Among indigenous Peruvians living in a rural community, use of modern contraceptives was associated with economic status⁵⁵. Higher socioeconomic status was associated with contraception prevalence and access to contraception in a Guatemalan population⁵⁶. Additionally, a 1969-1970 study shows that Chilean women receiving funds practice contraception at higher rates than those not receiving the funds⁵⁷. However, one cross-sectional study of women in Peru participating in microcredit programs showed that participation was not associated with improved contraceptive use⁵⁸.

Geography and Contraception Method

Many studies have shown associations between area of residence and contraceptive methods used. For example, among Nicaraguan adolescents, living in a rural area is associated with lower rates of contraceptive use⁵. Access to family planning services has been cited as more limited in some rural areas, such as rural Mexican women having difficulty accessing pills for a medical abortion⁴⁴. In a rural community of indigenous Peruvians where use of modern contraceptives is low, those with contact to urban areas were more likely to use modern contraceptives⁵⁵. Additionally, residence in Tegucigalpa was positively associated with knowledge and acceptability of emergency contraception in a study conducted in Honduras²⁵. Conversely, a study of Paraguayan women showed that living in rural areas was less associated with uptake of herbs as a contraceptive method³⁵. Overall, residence in rural areas is associated with decreased use and/or knowledge of modern contraceptives.

Ethnicity and Contraception Method

Many countries in LAC have indigenous populations. Of the literature comparing contraceptive prevalence between indigenous and non-indigenous populations, indigenous populations tend to have lower contraceptive prevalence. Several studies evaluate the differences in family planning between the Ladina and indigenous women in Guatemala. Compared to ladina women, indigenous women in Guatemala undergo institutional deliver and have contraceptive needs met at far lower rates. Not speaking Spanish is the most significant factor in this difference, and economic disadvantage is also an important factor. Rural residence and lower levels of education were not as important⁵⁹. Analysis of DHS survey data from Guatemala in 1983 shows that compared with Ladina women, indigenous women had a much lower contraceptive prevalence, use maternal and child health services with less frequency, deliver in a medical facility less frequently, and have less knowledge of modern contraceptives⁶⁰. Another study showed that ethnicity was strongly associated with access to contraception, with Ladino women having greater access than indigenous women⁵⁶.

Other examples of indigenous communities having low contraceptive prevalence include the Toba community in Cacique Sombrero Negro in northern Argentina and indigenous Peruvians^{61,55}.

Summary and Conclusions

Overall, prevalence of contraceptive use in Latin America and the Caribbean has increased with time. However, some literature suggests that short acting methods and sterilization greatly contribute to the increased prevalence of contraceptive use. Although LARCs have been used with satisfaction among women in the region, they continue to have a low prevalence in the region and it is believed that barriers to use, including provider knowledge and attitudes, may contribute to this. Of the additional contraceptive method types reviewed, female sterilization is cited as being the most prevalent contraceptive method in the region. Incomplete or ineffective contraception counseling by providers may be associated with the high prevalence of this permanent procedure. Interventions to increase knowledge about modern contraceptive methods for providers and lay people may promote increased uptake and acceptability of modern contraception as has been well documented with the case of emergency contraception in the area. Another area where educational interventions for providers may impact use of family planning services is abortion. The literature suggests that there is low access to abortion services in LAC compared to other regions and that there are many maternal deaths in this region due to unsafe abortions. Despite an overall low acceptability of abortion in the region, medical abortions are seen as more acceptable and access to medications or resources for safe abortions reduces morbidity and mortality related to unsafe abortions. Use of modern contraceptives is impacted by some sociodemographic factors. Having lower socioeconomic status, living in rural areas, and indigenous heritage tend to be poorly associated with use of modern contraceptives. Surprisingly, religion does not seem to play a significant role in contraceptive method choice.

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