The Context and Limitations of Female Sterilization Services in Pakistan

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Abstract

Introduction: Female sterilization has long been the most popular method of family planning (FP) in Pakistan, and yet most public health experts feel it contributes little to controlling family size or to population welfare. We used Pakistan Demographic Health Survey (PDHS) data to understand the role female sterilization plays in the overall context of FP in Pakistan.

Methods: We performed a secondary analysis of data from the PDHS 1990-1 and 2006-7 to study factors that lead to sterilization and trends in the use of the procedure. In addition, census data were multiplied by proportions from PDHS data to estimate the number of women availing sterilization services.

Results: Around 1.9 million women in Pakistan are currently sterilized - up from 0.55 million in 1990-1, and around 173,867 undergo the procedure, annually. Women usually receive sterilization after 30 years of age (mean = 39) and after six children. The probability of sterilization increases with age, family size,and urban residence,and is unaffected by poverty, province of residence, or the woman or her husband's education. Most sterilizationis conducted in public sector facilities.

Conclusions: Sterilization in Pakistan may be common, but occurs too late to have any significant effect on family size or benefit public health. Future avenues to make this option more useful to women and society would be to improve the repertoire and access and quality of FP services that are available, and to address governance issues that limit the performance and utility of government facilities.

Keywords: Family planning, CPR, Contraception, Utilization, Policy, Pakistan, Programming, Service delivery.

Introduction

The use of contraception in Pakistan remains low while the population continues to expand at one of the highest rates in the world (2.1%). Only a third of married couples currently use a modern or traditional method for family planning(FP) of which females terilization or tubal ligation are the commonest method used.[1] Public health experts worry that most sterilizations occur among older women with too many children, thus contributing little to public health or to limiting family size in Pakistan.

Female sterilization is the most common FP method used worldwide.[2] Women use sterilization for a variety of reasons including its perceived permanency and success rate,[3] insurance coverage, lack of other contraceptive choices and socioeconomic status.[4-6] While sterilization is more common among the poorest and socially disadvantaged in some locations, this is not the case elsewhere. For example, sterilization is uncommon among either rich or poor women in Africa and Europe.[2] On the other hand, it is the preferred method in Latin America and South Asia, albeit for completely different reasons. Historically, India promoted FP via sterilization as a state policy,[7] and despite a change in this policy in the 1980s, the preference for the method persists.[8] By contrast, the preference for sterilization in Latin America is driven by individual choice. Strong cultural norms in these countries lead to early marriages followed quickly by shortly-spaced children. Women then seek sterilization to limit families while they are still in their 20s.[9,10]

Although no active policy promoted it, female sterilization became the most common component in the method mix in Pakistan. There may be two reasons for this. One is that the perennially irregular supply of contraceptives at public facilities means that women wishing to use FP must either seek private means or undergo sterilization at public facilities which does not depend on availability of commodities and is a onetime procedure. Second, since it is a permanent method, once sterilized, women continue to be counted as contraception users as long as they are below 49 years of age. This number accrues over time and over time sterilized women become the largest group within the overall small number of modern contraception users.[1]

The public sector accounts for only 35% of all FP services

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in Pakistan.[11] One caveat is that government services are the main source of female sterilization and for FP services for those in the poorest quintile, and therefore may be viewed as a means of social protection.[12] Until recently, both the ministries of health and population welfare and their provincial counterpart departments provided a complementary array of FP services from a network of nearly 15,000 health and family welfare facilities. These ministries were abolished in 2011 and their functions were devolved to provincial health and population welfare departments. This devolution presents a rare opportunity to review factors that have limited the scale of public sector FP services and institute reforms to enhance access to FP in the country.

We present an analysis of data from the Pakistan Demographic Health Surveys (PDHS) of 1990-1 and 2006-7 to compare trends and describe the current context and role of female sterilization in FP in Pakistan. Our aim is to study the determinants of sterilization and find gaps in services to provide actionable information to policymakers who are restructuring health and population welfare departments after devolution, and donors who are supporting both the public and private sectors.

Methods

Both the 1990-1 and 2006-7 PDHS were conducted by Measure DHS and Pakistan's National Institute of Population Studies (NIPS) using standard DHS methodology which is well-documented.[1,13] We performed a secondary analysis of data publicly available from Measure DHS's website. There are separate databases for both the 1990-1 and 2006-7 surveys.

Data were analyzed using SPSS 13.0® and Microsoft Excel®. Simple cross tabulations, means, and frequency were drawn from each of the databases for key indicators (Tables-1-4). The chi-square test and T-test were applied to compare results from 1990-1 and 2006-7 using Microsoft Excel. We also multiplied specific proportions from the data (e.g. the prevalence of sterilization) by the population figures from the Pakistan Census Organization for that year to determine the actual number of women depicted by that indicator. For example, if eight percent of all married women of reproductive age (MWRA) reported being sterilized in the PDHS 2006-7, this proportion would be multiplied by the total number of MWRA in the country at the time (23,582,784 women) to arrive at 1,933,784 women in Pakistan who would be sterilized in Pakistan in 2006-7. The added value of this analysis is that it provides policy and programme decision makers with actual numbers of women that avail any service, which is a more relevant

Table-1: Comparison of trends between PDHS 1990-1 and 2006-7.

	1990-1	2006-7	% Change	P
Mean age at sterilization	38+6.3	39±6.1	3%	<0.001
Total number of sterilized women	549,352	1,933,784	252%	<0.001
Number of sterilizations in past 12 months	76,909	173,867	126%	<0.001
Among all MWRA	4%	8%	100%	<0.001
Among all contraception users	30%	28%	-7%	<0.001
Among modern methods	40%	38%	-5%	<0.001
Among rural women (percent)	2%	7%	274%	<0.001
Among rural women (actual numbers)	201,523	1,121,720	82%	<0.001
Among urban women (percent)	7%	10%	39%	<0.001
Among urban women (actual numbers)	379,209	832,896	54%	<0.001

Table-2: Comparison of sterilized and non-sterilized women.

	Not sterilized	Sterilized	% Difference	p
Mean age (years)	32±8.6	39±6.1	22%	<0.001
Age at first birth	21±4	20±3.6	-5%	<0.001
Self perceived ideal number of children	3.9±1.3	4±1.3	2%	0.253
Total children ever born	3.7±2.8	6±2.2	62%	<0.001
Sons	1.7±1.5	2.9±1.4	71%	<0.001
Daughters	1.6±1.6	2.5±1.6	56%	<0.001
Children that have died	0.4±.85	0.6±1	50%	<0.001
Live in a rural area	33%	41%	24%	<0.001
Woman's education in years	3.9±1.4	3.8±1.4	-3%	0.155
Husband's education in years	4.3±5.8	4.5±6.4	-8%	0.002
Wealth quintile				
Poorest	20%	17%	-15%	0.044
Poorer	20%	15%	-25%	<0.001
Middle	19%	20%	5%	0.816
Richer	20%	24%	20%	0.004
Richest	20%	25%	25%	0.005

Table-3: Distribution of female sterilization by province and location.

Province	Location	% that are sterilized
All Pakistan	Total	8
	Urban	10
	Rural	7
Punjab	Total	9
	Rural	8
	Urban	9
Sindh	Total	9
	Rural	6
	Urban	11
Khyber Pakhtunkhwa	Total	3
	Rural	3
	Urban	6
Baluchistan	Total	4
	Rural	4
	Urban	6

Table-4: Venues for female sterilization.

	Punjab %	Sindh %	NWFP %	Baluchistan %	Total %	Actual
Any public	73	72	86	58	73	126,694
Government hospital/RHSC[1]	67	68	82	58	68	118,382
Rural health centre/MCH[2]	3	1	2	-	2	4,268
Mobile service camp	1	1	2	-	1	1,572
LHWs	<1	<1	-	-	<1	674
Lady HealthVisitor	1	-	-	-	1	1,348
Basic health unit	-	1	-	-	<1	449
Other public	-		-	-	-	-
Any private	26	28	14	37	26	45,152
Private/NGO hospital/clinic	23	25	14	21	23	39,985
Private doctor	3	3	-	16	3	5,167
Don't know	2	-	-	5	1	2,022
Total (across provinces)	65	27	6	3	100	173,867

[1]RHSC: Reproductive Health Services Centre.

[2]MCH: Maternal and Child Health Services Centre.

statistic for planning interventions and developing budgets, than simple percentages. Finally, predictors of receiving sterilization and for doing so in the public sector, were assessed using multiple logistic regressions.

Results

Female sterilization in Pakistan accounts for 38% of all modern methods and approximately eight percent of all MWRA are sterilized. This proportional contribution to all modern methods is consistent with the world average[2] and has remained largely unchanged since 1990-1. This proportion of 38% of all FP users — unchanged from 1990-1 — translates into approximately 1.9 million women between the ages of 15 and 49 being sterilized in 2006-7, representing a substantial increase from approximately 550,000 women having sterilization in 1990-1. By 2006-7, approximately 173,000 women were undergoing sterilization annually, which was a considerable increase from 77,000 in 1990-1. The use of sterilization increased far more in rural than in urban locations, which is consistent with the overall FP trend in Pakistan[13] (Table-1).

Sterilizations are virtually non-existent among women with one or fewer children and those below the age of 23.The incidence of sterilization increases steadily after age 30 and reaches a plateau around age 40. Sterilized women are considerably older (39 vs. 32 years, p<0.001) than unsterilized women. The educational characteristics of these women and their husbands are similar to those of unsterilized women and their husbands. Although their concept of an ideal family size was similar (4.1 vs. 4.2, p= 0.253), sterilized women have nearly twice as many children than unsterilized women (6 vs. 3.7, p<0.001) (Table-1). Thus, the procedure contributes little to limiting family size. It is noteworthy that women who undergo sterilization have more children at any age than those who are no sterilized (Figure-1).They begin having children a year before unsterilized women and are twice as likely to have had a child die. Sterilizations are far more common in rural locations and in Punjab province (Table-3). This is consistent with the population distribution of the country.

Table-5: Multiple regression analysis of predictors of female sterilization.

	AOR	Lower	Upper
Age	1.20	1.09	1.15
Age at first birth	0.90	0.86	0.94
Total children ever born	1.21	1.11	1.33
Heard of FP on radio in last month			
No	1.00		
Yes	1.73	1.18	2.54
Area of residence			
Rural	1.00		
Urban	1.42	1.01	1.98

Factors that were not significant: Husband lives in house, no. of other wives, woman's highest year of education, husband's highest year of education, province of residence, wealth Index - wealthy vs. poor, wealth index -poorest, children that have died, heard FP messages on TV last months.

We calculated the total number of women who received the procedure in a given year as only 14% of all sterilized women in 1990-1 and nine percent in 2006-7 had undergone the procedure in the past 12 months. It appears that only around 76,909 women had received the procedure in the year prior to the 1990-1 survey and

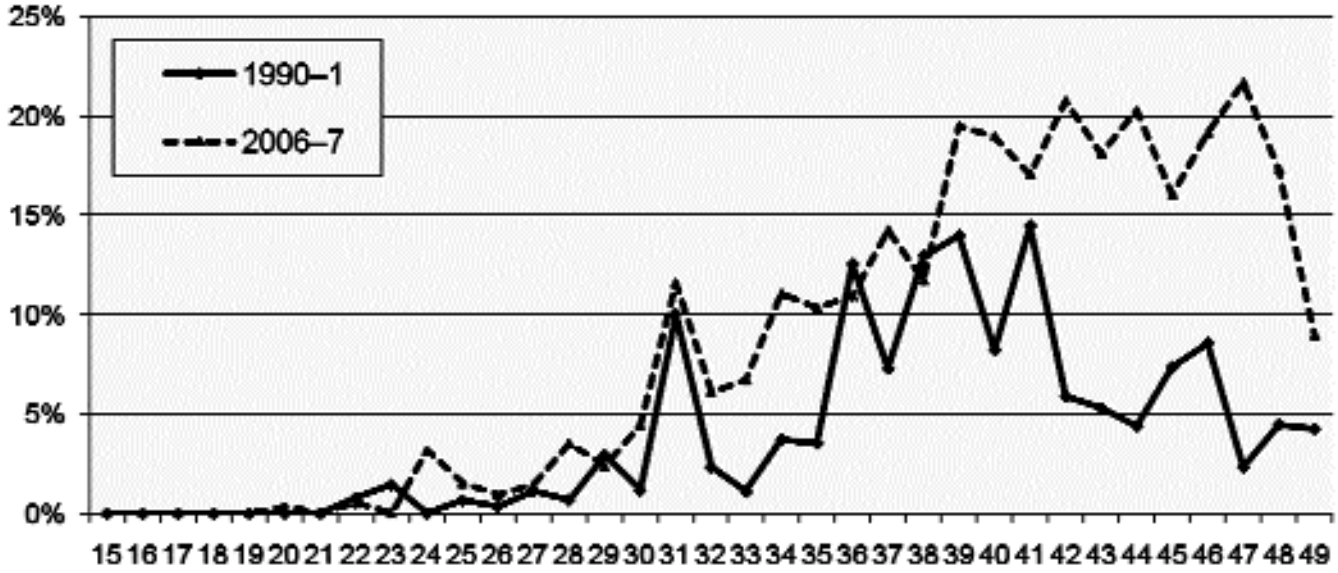

Figure-1: Female sterilization as a function of age.

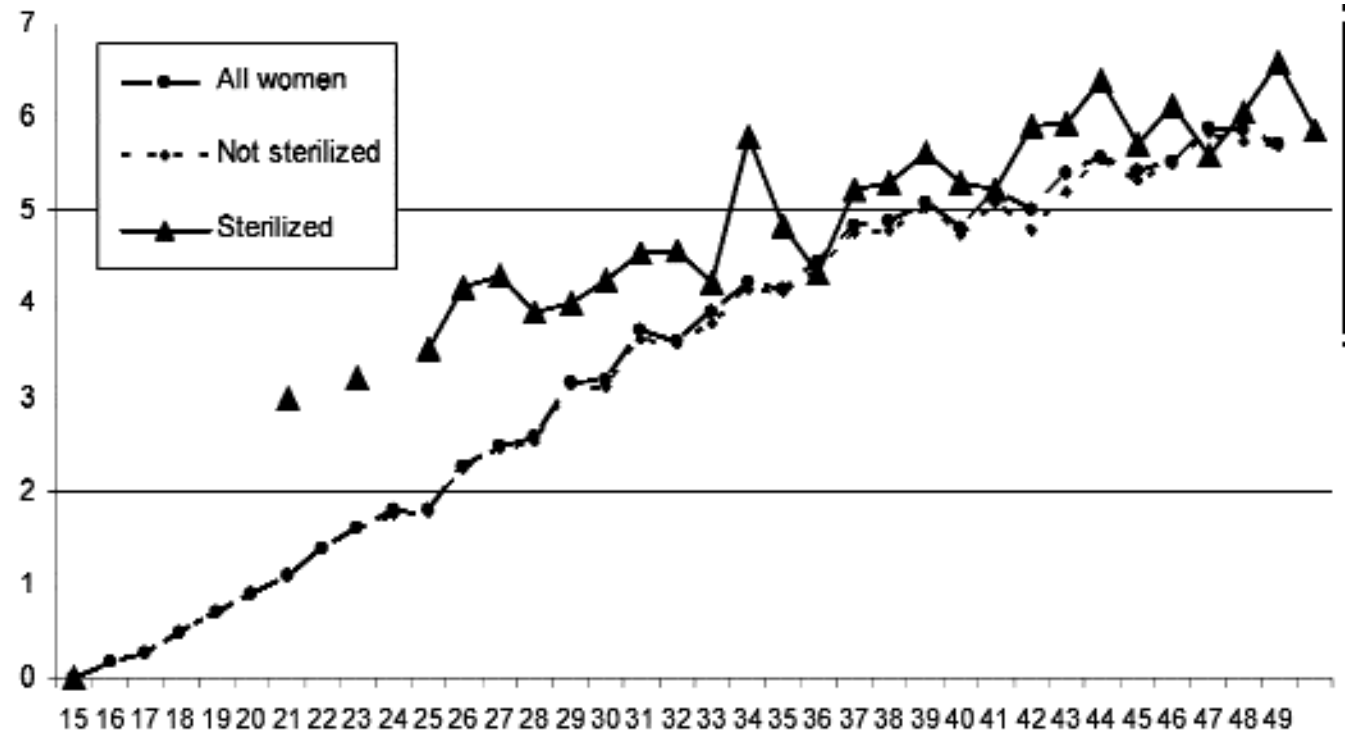

Figure-2: Number of children of sterilized and non-sterilized women as a function of age.

173,867 women in the year prior to the 2006-7 survey. This means that sterilization services accounted for ten percent of all contraception services in 1990-1 and six percent in 2006-7.[14] The public sector provided 73% of all sterilization procedures in 2006-7, down from 85% in 1990-1. Within the public sector, nearly all procedures (94%) take place at reproductive health centres run by the Ministry of Population Welfare and the provincial Population Welfare Departments. The bulk of private sector procedures take place at hospitals or clinics run by

NGOs or entrepreneurs (Table-4).

Regression models were developed for receiving sterilization. The model for receiving sterilization (Table-5) had an R2value of 0.227. It showed that the probability of sterilization increased with age and the number of children, and was higher for women who started families early, among urban residents and those who had heard of FP on the radio. There was no correlation with husbands' and wives' wealth or education, or with prior death of children.

Discussion

Our findings confirm the popular notion that although female sterilization is the most common contraceptive method used in Pakistan, it occurs too late and after too many children to have any significant impact on family size. Sterilization is uncommon before the age of 30 (mean age= 39 years), compared to around 29 years in Latin America.[9,10] These women have, on average, six children compared to 3.7 for unsterilized women.

Personal factors such as increasing age, increasing number of children, first birth occurring at an early age, and receiving FP messages, were associated with the probability of having sterilization. These observations suggest that sterilization represents a lack of access to FP information and services for many women who then turn to sterilization to limit their families, but not before they have had 2-3 children more than they had intended. In fact, women who undergo sterilization may have even lower access to information and services than most, as exemplified by the fact that at any age, they have more children than those who do not undergo sterilization (Figure-2).

Most general medical care and FP is provided by the private sector in Pakistan's mixed public-private healthcare system.[15-17] Female sterilization services are mostly in the public sector and thus run contrary to this norm; both client and provider factors contribute to this phenomenon. Procedure costs are high for the client and may be prohibitive in private settings for most poor women unless they are absorbed by providers (as in the public sector). From the providers' perspective, public sector supply of commodities are inconsistent[18] and services are often available for only a few hours a day. Sterilizations are a one-off procedure that can work well with sporadic availability of personnel, services, and commodities, and are therefore well-suited to the public sector.

It is well known that a limited menu of FP choices and a limited availability of services lead to low contraception uptake and higher sterilization prevalence.[9] These factors are particularly important for Pakistan where condoms and sterilizations accounted for 69% of the modern method mix in 2006-7 and FP services reached only 12% of MWRA.[1,19,20] While pills and intrauterine contraceptive devices (IUCDs) have been available, poor counselling and side effect mismanagement have fostered a lack of trust in these methods[21] and until recently, injectable contraceptives have never been properly introduced in the country. Globally, female sterilization is a crucial choice in the overall repertoire of available FP methods.[2] Even though it is a fertility-limiting method, it is availed by younger women in some countries who recognize that they have completed their families.[9,10] This recognition does not occur in Pakistan. Thus, while extremely common in Pakistan, sterilization occurs too late for most women to contribute significantly to the wellbeing of women, their families, and the national public health agenda.

A number of remedies can rectify this situation, but since no one major actor (such as the government) is the dominant provider of FP services, any proposed solution may take a long time to permeate and take hold. One clear step is to expand the overall range of choices that are available in Pakistan. The introduction, penetration, and diffusion of newer methods has been slow in Pakistan, although this may be changing. Since the 2006-7 PDHS, a number of public, private, and NGO initiatives have promoted methods such as IUCDs and injections. A newer and cheaper version of Levonorgestrel implants has recently been registered and marketed, and the government's very large lady health worker (LHW) programme has included three-month injectable contraceptives in their repertoire. The variety and sources of condoms and pills has also increased.

A more important development is the increasing involvement of NGOs in FP services and it is possible that in the past 2-3 years, NGOs now serve more women than the public sector does.[22] This is important because these NGOs provide a comprehensive method mix and combine service delivery with demand creation and outreach. There is a clear need to address different service delivery models including contracting-in or performance-based financing, contracting-out, the use of non-physician providers at facilities, and the use of social entrepreneurship to provide contraception in remote locations. Some of this may already be happening as pilots of vouchers, community-based distribution, and contracting-out are underway at scales that include several districts or even entire provinces.

Finally, there are approximately 3.5 million women with

an unmet need for limiting families.[23] The current annual output of around 175,000 sterilizations and 100,000 IUCDs is hardly sufficient to meet this need anytime soon. Perhaps a project approach is warranted to increase the utilization of existing government facilities and recruit NGO facilities in providing sterilizations (and IUCDs). However, such an approach will have to overcome governance issues such as overstaffed but underutilized government facilities, lack of accountability, and underperforming personnel. Better coordination and referrals within the public sector and between the public and private sector, are also required.

This is a secondary analysis of data from national surveys. We were limited by the sampling frame of the survey which was designed to inform at the national level, and minimally at the provincial level. It cannot inform at the divisional or district level. We were also limited by the variables available in the survey. For example, while studying sterilization, there were no questions about women's experiences in availing the procedure, method choices prior to sterilization, what processes led to their ultimate decision to undergo the procedure, or what their post-procedure experiences were. We multiplied population proportions from the PDHS to arrive at estimates of women that had availed sterilization. Such estimates are subject to wide confidence intervals given the sample size constraints discussed above. It is also noteworthy that the last population census in the country is from 1998 and subsequent population figures are themselves estimates.

Going forward, there is an urgent need to broaden the contraceptive method choices available, including new methods, dramatically increasing the efficiency of existing facilities to deliver quality services, perhaps even adding new venues of delivering FP services, and innovative business models to deliver these services that maximize the considerable resources being invested into family planning in Pakistan. This is an agenda for both policymakers and health systems researchers.

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