Desire to Limit Childbearing and Its Associated Factors Among Married Women: Findings From A Cross-Sectional Survey In Karachi, Pakistan

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Abstract

Background:

Increasing population growth and uneven distribution of scarce resources is a hurdle for country's economic growth. Hence, we aim to determine desire to limit child bearing and factors associated with limiting child bearing among currently married women aged 15 to 49 years residing in squatter settlements of Karachi, Pakistan.

Methods:

A multistage cluster, cross sectional survey was conducted in randomly selected households of urban squatter settlements of Karachi. A total of 4,485 married, non-pregnant, were interviewed using a structured questionnaire and adapted Operational framework of "Pullum 1980" to determine potential factors associated with limiting family size. Outcome of interest was defined as a desire to limit childbearing among married women of reproductive age group. Multivariable regression was performed using SPSS version 13.0.

Results:

The median age of participants was 30 years (IQR 25-35 years) and the median number of living children was 3 (IQR 2-4). Of 4485 women, 2109 (47%) expressed desire to limit childbearing in future. Multivariable logistic regression showed that women of 18 to 27 years and 28 to 37 years (AOR 0.25, 95% CI: 0.19-0.39 and AOR 0.39, 95% CI: 0.22-0.47 respectively), illiterate (AOR 0.34, 95% CI: 0.21-0.53), and low wealth quintile (AOR 0.41, 95% CI: 0.25-0.57), not using any contraceptive method (AOR 0.53, 95% CI: 0.44 to 0.63), sons less than daughters (AOR 0.74, 95% CI: 0.62-0.87), were less likely to limit childbearing. Women who practiced autonomy (AOR 1.25, 95% CI: 1.08-1.41) and perceived ideal family size as ≤ 2 children (AOR 2.62, 95% CI: 2.07-3.32) were more likely to limit childbearing.

Conclusion:

Age, education, low wealth quintile, having sons, autonomy and usage of contraceptives were determining factors of women's desire for limiting childbearing. Behavior modification strategies should be devised to modify fertility intentions among women to increase contraceptive use and fertility decline.

Take Home Message:

This community based study highlights fertility intention and basic associated factors and offers a ground to design approaches for modifying behavior towards less childbearing desire among women of reproductive age group in Pakistan where less desire to limit childbearing is reported.

Plain English Summary:

Unplanned population growth has major and serious implications on resources exploitation. In this community based survey, a group of married women were interviewed to determine their fertility intentions for future and sought women's desire to limit childbearing in future.

Women of reproductive age group from squatter settlement of Karachi were asked about whether they want more children or not in future and inquired about the factors which were associated with the intentions of limiting family size.

Of the 4485 participants, 2109 (47%) showed the desire to limit family size in future. Various factors which were identified in this study associated with the less desire to limiting childbearing were young and relatively older age, no education, low wealth quintile, no use of contraceptives, and having less number of sons than daughters. Whilst, women with decision making capacity and having perceived ideal family size of two children were more intended to limiting of family size.

In conclusion; the study highlighted key independent factors to limiting childbearing for which behavior modification strategies should be devised to increase contraceptive use and fertility decline among women.

Background:

Pakistan is the 6th most populous country in the world. [1]. Approximately 35% of the Pakistan's population is under the age of 15, and 4% is over the age of 60, entailing a high dependency ratio [2]. Uncontrolled population growth and increasing size become a hurdle for country's economic growth once dividend is not balanced according to the available resources [3, 4]. High growing population raises demand for resources and, if inappropriately handled, has implications such as resources exploitation, poverty, high unemployment rates, population unrest, high crime rates, mental illnesses etc. [5, 6].

Fertility being fundamental component of population dynamics contributes in determining the rate of growing population [7]. Fertility preference provides direction towards the future fertility course to the magnitude one wants to acquire for preferred family size and indicator for general attitudes towards the use of family planning methods [8]. Whereas, in Pakistan, based on social, cultural and economic structure, society generally value for having high number of children and low demand for use of contraceptive methods resulting in high fertility [9]. The co-existence of high fertility, and high child mortality have been observed as demographic trend in developing countries, Pakistan still has a high neonatal and infant mortality rate [10].

Pakistan Demographic and Health Survey 2017-18, a nationally representative survey, shows that around 44% of women who are currently married want to limit childbearing or are permanently sterilized [7]. Generally, desire to limit childbearing depends on the number of existing children i.e. more living children a women has, greater the likelihood that women want no more children, since, survey showed that 89% of women with no children want to have a child sooner as compared to 14% of women who do not prefer more children [7]. In Pakistan, despite of policies, multiple programs and strategies, reported

contraceptive prevalence is 35.4% which is substantially low, TFR reported in Pakistan is 3.6 births per women, whereas, in urban area TFR is 2.9 children/women which still represents favor towards a large family size [7]. A previous study conducted in Pakistan has shown that fertility preference is influenced by age of the woman, parity, child composition, education and household income determinants [9]. “Pullum 1980” Framework suggests several factors influencing fertility intentions such as socio-economic status, socio-cultural norms, intra-spousal communication, and demographic factors. [8]. Thus, measuring fertility intentions and preferences along with its determinants, and ascertaining the degree to which they anticipate the fertility behavior, is important for population policy formulation and implementation of the programs designed for birth spacing [8]. Hence, the objective of this study was to determine fertility preferences and factors associated with limiting childbearing among currently married women in squatter settlements of Karachi, Pakistan.

Methods:

Study design and setting

A cross sectional survey was conducted on randomly selected households to interview married women of reproductive age group (MWRA) residing in 10 Sukh Stations, intervention sites, under Sukh initiatives. A tripartite partnership between Aman Foundation, Bill & Melinda Gates Foundation, and the David & Lucile Packard Foundation developed a family planning program called as Sukh initiative [11]. It has a vision to empower women for accessing contraceptive services by increasing knowledge, improving quality of services and expanding the basket of choices, contributing to the goals of Family Planning 2020. Thus, it aimed at increasing the use of modern contraceptives by 15 percentage points among married couples.

While involving multiple national and international partners including Aman Health Care Services, JHPIEGO Pakistan, dkt Pakistan, Aahung and Aman Telehealth (ATH), the project implemented a combination of approaches and strategies which included door-to-door community services by Aman Community Health Workers (CHWs) for counseling, referral and replenishment of supplies; life Skilled Based Education for the youth; tele-health services for providing family planning information and counseling; and enhancement of quality of family planning services among selected public and private facilities within the intervention sites. These sites were administrative units of Sukh initiatives’ catchment population comprising of approximately 100,000 populations in each station. The sample of the survey was distributed among stations proportionate to their population size [11].

Sampling strategy and participant recruitment

The lists of households were available for all the Sukh stations through Aman Community Health Program (ACHP). For each station, the sequentially numbered blocks of 200–250 households were formed. The estimated sample size for each station was divided by 50 (the predefined number of women to be interviewed from each block) to achieve number of blocks to be included in the survey from each station. The number of blocks varied from a minimum of 33 in station 10 to a maximum of 76 in station 2. The households in each randomly selected block were then approached using systematic sampling

technique, selecting every 5th house after selecting one house randomly. In a household where more than one eligible woman was found, one woman was selected randomly for the interview. A total of 4485 married and currently non-pregnant women in the reproductive age group 18 to 49 years were interviewed for this study.

Interviews

Interviews were conducted by trained field staff in the local language to ensure clear understanding of questions, appropriate response and relevant information from participants. Moreover, respondents were randomly selected from general population in order to minimize the selection bias. Chance of recall bias was minimal because women usually tend to recall and provide accurate information about previous pregnancy history, reproductive history and contraceptive usage. An operational framework of, "Pullum 1980" was adapted and modified to determine factors associated with limiting family size. This framework focused on "Fertility Preferences" under which it has been asked about the "desire to limit child bearing". Considering this, it suggests several factors influencing fertility intentions such as socio-economic status, socio-cultural norms, demographic factors, women's autonomy, contraceptive usage and history of previous pregnancy [8]. The fundamental questions included in this study were based on the aforementioned information on factors provided in the framework (Fig. 1).

Figure 1: Operational Framework to assess fertility preference

Outcome variable

To operationalize fertility preference; non-pregnant women were asked that if they would like to have a/another child, or would prefer not to have more children to determine 'Desire to limit childbearing'.

Covariates

'Educational level' was defined as those who never attended school or did not know how to read or write were considered as not educated while those who had been to school were categorized as educated. 'Wealth quintile' was defined as high, middle and low based on household possessions based on Principal Component Analysis scoring system (PCA). 'Women autonomy' was labeled as those having a say in choosing husband and deciding the date of marriage. 'Current contraceptive user' was defined as women using any contraceptive method currently. 'Media exposure' was defined as exposure to any media such as radio, television or newspaper providing information related to family planning methods. 'Living children composition' was categorized as having number of sons greater, equal to or less than number of daughter. 'Antenatal visits' were defined as frequency of antenatal visits during last pregnancy. 'Ever contraceptive user' was defined as women who have ever used any contraceptive method. 'Ever had poor pregnancies outcome' was defined as women if had any history of adverse obstetric outcome such as abortion, intrauterine death.

Sample Size

The contraceptive use (any method) in urban Sindh, Pakistan was 42.7% as reported in Pakistan demographic health survey (PDHS) [12]. Further, assuming 2.5% as bound on the error, 95% confidence level of significance and design effect of 2.247 reported in aforementioned PDHS survey [12], the minimum sample size estimated (using the Open Epi version 2.3) was approximately 3,375 currently married women in the reproductive age group. Considering the sensitivity attached with the family planning use and assuming a high refusal rate, sample size was inflated by 30% to adjust for non-responders which turned out to be approximately 4385 after adjustment. However, final data collection was done from 4485 participants. The sample was distributed among stations proportionate to their population size.

Statistical methods:

Data were analyzed using SPSS 19.0. Descriptive analysis was done to calculate frequencies and proportions for categorical variables. Chi-square test was done to assess distribution of participants according to 'desire to limit childbearing', outcome status. The age of the participants was categorized keeping ten year interval which is widely used based on literature review for comparing young, middle and older aged women. The other continuous variables i.e. number of living children, age of the youngest child, ideal family size, antenatal visits and duration of marriages were also categorized based on commonly used categories in different literature and distribution of data in each category. To identify the factors associated with desire to limit childbearing, univariable analysis was carried out and crude odds ratios and their 95% confidence intervals along with p-values were calculated. Data were analyzed using logistic regression for both univariable and multivariable analysis. A p-value of less than 0.25 was considered as criterion for a variable to be significant in univariable analysis. Univariable analysis was followed by assessment of multi-collinearity between all independent variables. Cramer's V and Phi was used to assess the collinearity between categorical independent variables, where cut off of ≥ 0.5 was considered an inter-correlation between these variables. All independent variables with p-value < 0.25 in the univariable analysis were selected for multivariable analysis by purposeful selection method. The significance of each independent variable in the multivariable analysis was assessed by its p-value and likelihood ratio testing. Statistical significance was defined as p-value less than 0.05.

Results:

The median age of study participants was 30 years (IQR 25–35 years), while the median number of living children was 3 (IQR 2–4). About 63% of the women had formal education while 37% women had never attended the school. Out of total married women, 47% ($n = 2109$) expressed their desire to limit childbearing in future.

Table 1 describes distribution of participants according to factors which can influence desire to limit childbearing. More women with age ≥ 38 years had higher desire to limit family bearing (50.5%) as compared to younger age groups who wanted more children (13.1%) (p-value < 0.05).

Table 1

Frequency distribution of factors associated with desire to limit child bearing among women (n = 4485), Karachi, Pakistan

Characteristics	Want no more children N (% (95% CI)) 2109 (47% (43.9–50.1))	Want more children n (% (95% CI)) 2376 (53%(49.9–56.1))
Age *		
<i>18 to 27 years</i>	153 (7.3)	866 (36.4)
<i>28 to 37 years</i>	892 (42.3)	1199 (50.5)
<i>38 years and above</i>	1064 (50.5)	311 (13.1)
Education Status * ^a		
<i>Not educated</i>	812 (34.2)	882 (41.9)
<i>Educated</i>	1564 (65.8)	1227 (58.2)
Ethnicity		
<i>Urdu</i>	719 (34.1)	715 (30.1)
<i>Punjabi</i>	331 (15.7)	323 (13.6)
<i>Sindhi</i>	264 (12.5)	365 (15.4)
<i>Pushto</i>	270 (12.8)	309 (13.0)
<i>Baluchi</i>	73 (3.5)	163 (6.9)
<i>Others</i>	452 (21.4)	501 (21.1)
Ownership status of house		
<i>Owned</i>	1319 (62.6)	821 (34.6)
<i>Rented</i>	789 (37.4)	1555 (65.4)
Wealth quintile * ^b		
<i>High</i>	898 (42.6)	1015 (42.7)
<i>Middle</i>	410(19.4)	440 (18.5)
<i>Low</i>	801 (38.0)	921 (38.8)
Duration of marriage		
<i>< 5 years</i>	88 (4.2)	812 (34.2)
<i>5 to 10 years</i>	468 (22.2)	965 (40.5)

Characteristics	Want no more children N (% (95% CI)) 2109 (47% (43.9–50.1))	Want more children n (% (95% CI)) 2376 (53%(49.9–56.1))
> 10 years	1553 (73.6)	599 (25.2)
Women autonomy * ^c		
<i>Yes</i>	1274 (60.4)	1178 (49.6)
<i>No</i>	835 (39.6)	1198 (50.4)
Currently contraceptive user * ^d		
<i>Yes</i>	1189 (56.4)	829 (34.9)
<i>No</i>	920 (43.6)	1547 (65.1)
Ideal Family Size *		
≤ 2 children	590 (28.0)	632 (26.6)
3 to 4 children	1203 (57.0)	1355 (57.0)
≥ 5 children	916 (15.0)	389 (16.4)
Media Exposure * ^e		
<i>None</i>	1349 (64.0)	1574 (66.2)
<i>Any media exposure</i>	760 (36.0)	802 (33.8)
Number of living children		
<i>No children</i>	25 (1.2)	289 (12.2)
<i>1 to 2 children</i>	288 (13.7)	1294 (54.5)
<i>3 to 4 children</i>	895 (42.4)	603 (25.4)
≥ 5 children	901 (42.7)	190 (8)
Living children composition * ^f		
<i>Sons > daughters</i>	905 (42.9)	855 (36.0)
<i>Sons = Daughters</i>	474 (22.5)	386 (16.2)
<i>Sons < Daughters</i>	689 (32.7)	842 (35.4)
<i>No Children</i>	41 (1.9)	293 (12.3)
Age of youngest child *		

Characteristics	Want no more children N (% (95% CI)) 2109 (47% (43.9–50.1))	Want more children n (% (95% CI)) 2376 (53%(49.9–56.1))
<i>Up to one year</i>	1821 (86.3)	1906 (80.2)
<i>More than 1 year</i>	263 (12.5)	181 (7.6)
<i>No children</i>	25 (1.2)	289 (12.2)
Antenatal visits * ^g		
<i>≤ 4 visits</i>	1080 (51.2)	1220 (51.3)
<i>5 to 8 visits</i>	392 (18.6)	379 (16.0)
<i>> 8 visits</i>	637 (30.2)	777 (32.7)
Ever contraceptive user * ^h		
<i>Yes</i>	1716 (81.4)	1424 (59.9)
<i>No</i>	393 (18.6)	952 (40.1)
Ever had poor pregnancies outcome * ⁱ		
<i>Yes</i>	754 (35.8)	664 (27.9)
<i>No</i>	1355 (64.2)	1712 (72.1)
*P-value < 0.05		
^a Educational level was defined as those who never attended school or did not know how to read or write were considered as not educated while those who had been to school were categorized as educated		
^b Wealth quintile was defined as high middle and low based on household possessions		
^c Women autonomy was defined as those having a say in choosing husband and deciding the date of marriage		
^d Current contraceptive user was defined as women using any contraceptive method currently		
^e Media exposure was defined as exposure to any media such as radio, television or newspaper providing information related to family planning methods		
^f Living children composition was categorized as having number of sons greater, equal to or less than number of daughter		
^g Antenatal visits were defined as frequency of antenatal visits during last pregnancy		
^h Ever contraceptive user was defined as women who have ever used any contraceptive method		

Characteristics	Want no more children	Want more children
	N (% (95% CI))	n (% (95% CI))
	2109 (47% (43.9–50.1))	2376 (53%(49.9–56.1))
ⁱ Ever had poor pregnancies outcome was defined as women if had any history of adverse obstetric outcome such as abortion, intrauterine death		

Similarly, more educated women (65.8%) were inclined to limit child bearing as compared to illiterate ones (58.2%) (p-value < 0.05). Proportion of women practicing autonomy was high among women who desired to limit childbearing (60.4%) as compared to those who wanted more children (49.6%) (p-value < 0.05). Similarly, a larger proportion of women who desired to limit family size were contraceptive users (56.4%) as compared to those who wanted more children in future (34.9%) (p-value < 0.05). Likewise, proportion of women thinking ideal family size as ≤ 2 children was high among those who desire to limit childbearing (28.0%) as compared to their counterparts (26.6%) (p-value < 0.05). In addition, larger proportion of women who desire to limit childbearing had been exposed to media related to FP messages (36.0%) and were currently using any contraceptive method (60.4%) as opposed to those who wanted to have more children (p-value < 0.05). In contrast to this, smaller proportion of women who desired to limit childbearing had reported to have fewer sons than daughters (32.7%) as compared to those who wanted to have more children (35.4%) (p-value < 0.05).

In Univariable logistic regression analysis, women less likely to have a desire to limit childbearing were relatively younger in the age categories of 15 to 24 years and 25 to 34 years (OR 0.46, 95% CI: 0.23 to 0.51 and OR 0.66, 95% CI: 0.35 to 0.78 respectively). In addition, uneducated women (OR 0.42, 95% CI: 0.29 to 0.61), belonging to Baluchi ethnicity (OR 0.54, 95% CI: 0.37 to 0.81), to low wealth quintile (OR 0.44, 95% CI: 0.29 to 0.61), not current users of contraceptive methods (OR 0.61, 95% CI: 0.47 to 0.71), who have less number of sons than daughters (OR 0.84, 95% CI: 0.67 to 0.91), who have ever used family planning method (OR 0.56, 95% CI: 0.46 to 0.69) were less likely to limit childbearing in future.

Women who showed desire to limit family size were those who practiced autonomy (OR 1.37, 95% CI: 1.12 to 1.56), who perceived ideal family size as ≤ 2 children (OR 2.82, 95% CI: 2.17 to 3.31) and who had equal number of sons and daughter (OR 1.41, 95% CI: 1.17 to 1.52) (Table 2).

Table 2

Univariable analysis for factors associated with desire to limit child bearing among women, Karachi, Pakistan (n = 4485)

Characteristics	Unadjusted OR (95% CI)	P value
Age		< 0.001
<i>18 to 27 years</i>	0.45 (0.23–0.51)	
<i>28 to 37 years</i>	0.66 (0.35–0.78)	
<i>38 years and above</i>	1	
Education status ^a		< 0.001
<i>Not educated</i>	0.42 (0.29–0.61)	
<i>Educated</i>	1	
Ethnicity		
<i>Urdu</i>	1	
<i>Punjabi</i>	0.86 (0.67–1.11)	0.24
<i>Sindhi</i>	0.83 (0.63–1.82)	0.17
<i>Pushto</i>	0.85 (0.65–1.12)	0.26
<i>Baluchi</i>	0.54 (0.37–0.81)	0.003
<i>Others</i>	0.74 (0.59–0.93)	0.012
Ownership status		
<i>Owned</i>	1	
<i>Rented</i>	0.51 (0.31–1.21)	0.51
Wealth quintile ^b		
<i>High</i>	1	
<i>Middle</i>	0.53 (0.3–1.11)	0.25
<i>Low</i>	0.44 (0.29–0.61)	0.003
Duration of marriage		
< 5 years	0.49 (0.31–1.1)	0.057
5 to 10 years	0.33 (0.25–1.46)	0.13
> 10 years	1	
Women's autonomy ^c		

Characteristics	Unadjusted OR (95% CI)	P value	
Yes	1.37 (1.12–1.56)	< 0.001	
No	1		
Current contraceptive user ^d		< 0.001	
Yes	1		
No	0.61 (0.47–0.71)		
Ideal family size			
≤ 2children	2.82 (2.17–3.31)	< 0.001	
3 to 4 children	1.56 (1.31–1.82)	0.003	
≥ 5 children	1		
Media exposure ^e			0.26
None	0.71 (0.32–1.10)		
Any media exposure	1		
Living children composition ^f			
Sons > daughters	1	< 0.001	
Sons = Daughters	1.41 (1.17–1.52)		
Sons < Daughters	0.84 (0.67–0.91)		
No Children	0.67 (0.51–0.79)		
Antenatal Visits ^g			
≤ 4 visits	0.90 (0.79–1.12)	0.42	
5 to 8 visits	1.12 (0.91–1.34)	0.23	
> 8 visits	1		
Ever contraceptive user ^h			< 0.005
Yes	0.56 (0.46–0.69)		
No	1		
Ever had poor pregnancies outcome ⁱ			0.12
Yes	1		
No	0.54 (0.21–1.11)		

Characteristics	Unadjusted OR (95% CI)	P value
*P-value < 0.05		
^a Educational level was defined as those who never attended school or did not know how to read or write were considered as not educated while those who had been to school were categorized as educated		
^b Wealth quintile was defined as high middle and low based on household possessions		
^c Women autonomy was defined as those having a say in choosing husband and deciding the date of marriage		
^d Current contraceptive user was defined as women using any contraceptive method currently		
^e Media exposure was defined as exposure to any media such as radio, television or newspaper providing information related to family planning methods		
^f Living children composition was categorized as having number of sons greater, equal to or less than number of daughter		
^g Antenatal visits were defined as frequency of antenatal visits during last pregnancy		
^h Ever contraceptive user was defined as women who have ever used any contraceptive method		
ⁱ Ever had poor pregnancies outcome was defined as women if had any history of adverse obstetric outcome such as abortion, intrauterine death		

On multivariable logistic analysis, almost all the factors in the univariable analysis retained their significance. Women less likely to have a desire to limit childbearing were younger 15 to 24 years and 25 to 34 years of age (AOR 0.25, 95% CI: 0.0.19 to 0.39) and (AOR 0.39, 95% CI: 0.22 to 0.47) respectively, uneducated (AOR 0.34, 95% CI: 0.21 to 0.53), poor (AOR 0.41, 95% CI: 0.25 to 0.57), and not using any contraceptive method at the time of interview (AOR 0.53, 95% CI: 0.44 to 0.63). These women had less number of sons as compared to daughters (AOR 0.74, 95% CI: 0.62 to 0.87), and had ever-used a contraceptive method (AOR 0.49, 95% CI: 0.35 to 0.61).

Women who practiced autonomy (AOR 1.25, 95% CI: 1.08 to 1.41), who perceived ideal family size as ≤ 2 children (AOR 2.62, 95% CI: 2.07 to 3.32), and who have equal number of sons and daughters (AOR 1.13, 95% CI: 1.09 to 1.38) were more likely to have a desire for limiting births (Table 3).

Table 3
Multivariable analysis for factors associated with desire to limit child bearing among women, Karachi,
Pakistan (n = 4485)

Characteristics	adjusted OR (95% CI)	P value
Age of respondents		
18 to 27 years	0.25 (0.19–0.33)	< 0.001
28 to 37 years	0.39 (0.22–0.47)	
38 years and above	1	
Education status ^a		0.002
Not educated	0.34 (0.21–0.53)	
Educated	1	
Wealth quintile ^b		
High	1	0.42
Middle	1.01 (0.8–1.42)	
Low	0.41 (0.25–0.57)	
Women's autonomy ^c		0.003
Yes	1.25 (1.08–1.41)	
No	1	
Current contraceptive user ^d		< 0.001
Yes	1	
No	0.53 (0.44–0.63)	
Ideal family size		< 0.001
≤ 2children	2.62 (2.07–3.32)	
3 to 4 children	1.45 (1.19–1.78)	
≥ 5 children	1	
Living children composition ^e		< 0.001
Sons > daughters	1	
Sons = Daughters	1.13 (1.09–1.38)	
Sons < Daughters	0.74 (0.62–0.87)	

Characteristics	adjusted OR (95% CI)	P value
<i>No Children</i>	0.53 (0.35–0.81)	
Ever used any contraceptive method ^f		
<i>Yes</i>	1	< 0.001
<i>No</i>	0.49 (0.35–0.61)	
*P-value < 0.05		
^a Educational level was defined as those who never attended school or did not know how to read or write were considered as not educated while those who had been to school were categorized as educated		
^b Wealth quintile was defined as high middle and low based on household possessions		
^c Women autonomy was defined as those having a say in choosing husband and deciding the date of marriage		
^d Current contraceptive user was defined as women using any contraceptive method currently		
^e Living children composition was categorized as having number of sons greater, equal to or less than number of daughter		
^f Ever contraceptive user was defined as women who have ever used any contraceptive method		

Discussion:

In our study sample every other woman expressed her desire to limit childbearing in future. Women who took their own decisions, consider ideal family size as two children, and had equal number of sons and daughter showed desire to limit family size. On the other hand, women who were younger, uneducated, poor, had less number of sons than daughters, and had never used a contraceptive method showed no desire to limit their family size.

Our study findings are consistent with a nationally representative survey, Pakistan Demographic and Health Survey 2017-18, which reported that approximately 44% of women who were currently married wanted to limit childbearing [7]. Whereas, comparison with a regional study conducted in Ethiopia, a nationally represented survey, showed that almost half i.e. 43% of currently married women wanted to have no more children.[13]. The desire for more children or intentions to limit childbearing depended on number of children women already had [13]. In our study, 42.4% of women with 3 to 4 children showed a desire to limit childbearing in future.

Association of age with fertility desire has shown conflicting results; evidence showed the women at both extremes of age can express desire for more children. For example one study in Kenya found that women of ≥ 24 year of age were less likely to limit childbearing [8]. Furthermore, results from demographic health

survey conducted in Bangladesh showed that women at late childbearing stage had more children [14]. Whereas, Demographic and health survey of Nigeria revealed that women 15 to 24 years of age reported using modern contraceptive methods thus reflecting their sensitization for high fertility implications and preference for less number of children [15]. However, our study results showed that comparatively younger women aged 18 to 27 years were less likely to limit childbearing, which is consistent with low use of any contraceptive methods ever among females of young age category. These findings support other studies which have revealed that family opposition and cultural barrier for contraceptive usage and socio-economic pressure and family preferences for balanced number of children to fulfill family size leads to less desire for limiting childbearing among young females [16, 17]. Other contributing factors such as fear of side effects, lack of knowledge and inadequate outreach services, to overcome barrier for bridging the gap in reproductive services, regarding contraceptive methods lead to low demand for family planning services pushing women to produce more children in their reproductive life [16, 18, 19].

With respect to the education status of the women, we found that uneducated women were 76% less likely to have a desire to limit childbearing as compared to their counterparts. This evidence is supported by other studies across the world. For instance, data of 57 demographic health surveys were gathered to determine role of education in determining the fertility of women. These surveys found education as a key predictor of fertility and had a substantial impact on fertility and preference for future family size [20]. An empirical evidence from Colombia showed that demand for more children gets lower among more educated women, hence, effect of schooling is a significant predictor to limit childbearing [21]. Likewise, studies conducted in India, Bangladesh and China also found an inverse linear relationship between education status of the women and their fertility choices [22–24]. The most likely explanation for this evidence is that education enhances increase awareness and thinking capacity of women [20]. Thus, more educated women perhaps better appreciate the health and economic benefits of limiting the family size [20].

Moreover, we found in this study that women having equal number of sons and daughter were more likely to express desire for limiting further childbearing. Our study findings regarding children composition were comparable to studies conducted across other parts of the world. For example, a survey conducted in Kenya showed an evidence regarding sex ratio that women having more number of daughters as compared to the sons had more desire for children as compared to those women who had equal number of son and daughters [8]. A survey conducted among Bangladeshi women found to have stronger son preference which leads to increase desire and reduce the desire to limit childbearing, thus, sex preference is substantial contributor in quantifying fertility desire [25]. Similarly, one of the surveys conducted in Ethiopia found that women having equal sons and daughters had less desire for more children as compared to those having more daughters [13]. Further, these findings could be explained by well-known 'value of children theory' by Hoffman [26, 27]. According to this theory, in developing countries children are considered as an economic asset for the parents thus providing them support in earning mainly in their older age. Therefore, women tend to produce more children with the expectation of giving birth to more sons in order to increase economic certainty of parents [26, 28].

Regarding the socioeconomic status of women, it was found that women of low quintile had a less desire to limit childbearing. It might be due to the fact that children in poor families are considered as a “high-benefit” economic value and couple would thought them as an investment who pay back during their old age as observed in African traditions and culture [13].

With regard to the autonomy of women, our study found that autonomous women were more likely to limit childbearing as opposed to women with limited autonomy. Our study findings are consistent with other studies which indicate that women’s ‘say’ and discussion in family planning have a great impact on fertility preference, thus influencing contraceptive usage as well. For example, one of the studies conducted in Thailand established an inverse relationship between women’s autonomy and fertility choice [29]. Likewise, one study conducted in Pakistan showed that autonomy of women was significantly related with ever and current use of contraceptive use which ultimately reflects positive behavior for fertility intentions to have no more children [30].

In addition to the above factors, current contraceptive usage has vital role to play in favorable behavior towards family preference of limiting childbearing as evidenced by study conducted among currently married women in Kenya which found that fertility intentions for no more children was inversely linked with current use of contraceptive [8]. Likewise, study conducted among Nigerian women also revealed that current use of any contraceptive method is a significant predictor for fertility reduction [15]. These evidences support our study findings which found similar relationships between using contraceptive usage and intentions towards limiting childbearing.

The findings from this study should be seen in the light of some limitations. The most significant is that this study did not address fertility preferences of the male partner and childbearing; planning for family size and fertility preference is considered as a negotiable process between both of the partners and should highly depend on mutual agreement between husband and wife. Considering this, male partners should be involved to give holistic insight into couple’s attitude towards preference of their future childbearing, practicing reproductive behavior accordingly to the preference and decision to use contraceptive methods. Furthermore, this study would not be generalizable to women residing in rural area as women recruited for this study were from urban residence and rural place of residence have different socio-demographic and reproductive behaviors. This study could not assess temporal association as changes in the preference occur over the period of time due to change in societal, economic and family structure and unavoidable events such as natural disasters or wars and conflicts.

Despite these limitations, this is the first study in Pakistan which have explored the predictors of desire to limit childbearing and could have positive implications if strategize accordingly. In addition to this, the study was conducted as a population based survey which gives an opportunity to report true estimates along with true representation of the population. Additionally, findings from this study can be generalized to other similar urban areas of Pakistan and neighboring countries. Sampling strategy and technique applied to recruit participants was of remarkable value to avoid selection bias. Sample size calculation also used measures from national demographic and health survey thus increasing its robustness.

Conclusion:

In summary, the results of our study illustrate that factors such as age, education, wealth quintile, having sons, autonomy and usage of contraceptives were found to be potential predictors of women's desire for limiting childbearing. These factors could be of key importance for creating the demand for reproductive behavior change, for more family planning and the decline in fertility rate among women of reproductive age living in the squatter settlements of Karachi Pakistan. Based on the results of this study, we propose that efforts are required to promote use of family planning among poor young and illiterate women. Moreover, these women can be sensitized through devising behavior change strategies about the fact that more children could be the liability rather than of economic value. Hence, associated predictors found in this study would help to recommend policy measures about enhancing contraceptive use among youth especially through sensitization process and planned interventions to modify their reproductive behavior and fertility intentions.

Abbreviations:

TFR

Total fertility rate

MWRA

Married women of reproductive age group

AOR

Adjusted odds ratio

CI

Confidence interval

ACHP

Aman Community Health Program

ATH

Aman Tele Health

Declarations:

Ethics approval and consent to participate

The study was reviewed and approved by Ethical Review Committee at Aga Khan University (2946-CHS-ERC-14) PI. Dr. Sarah Saleem. Prior to the interview, the purpose and nature of the study was explained and written informed consent was obtained from each respondent.

Consent for publication: Not applicable

Availability of data and materials

The data of this study is available from the corresponding author on reasonable request.

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Competing Interests

The authors declare that they have no competing interests.

Authors' contributions

SS (Sarah Saleem) conceptualized the main study, wrote the proposal and acquired funding; also supervised the implementation of the study, data analysis and provided mentorship throughout the data analysis and manuscript writing process. SJ (Saleem Jessani) assisted in data management, data analysis and manuscript writing. SR (Shama Razzaq) conceptualized the research question, analyzed the data and wrote the manuscript. SA (Sumera Ali) provided guidance in data analysis and manuscript writing; helped in critically reviewing and improving the final draft of the manuscript. ZA (Zahid Abbasi) assisted in data management and review of the final manuscript. All authors have read and approved the final manuscript for publication.

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Figures

Figure 1

Operational Framework to assess fertility preference

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