



Predictors of Contraception Use Among Syrian Refugees in Lebanon: Results from a Cross-Sectional Study

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Abstract

Objectives The aim of this study is to explore the factors that could predict contraceptive use. This will help develop interventions to increase the use of family planning methods among Syrian refugees.

Methods We conducted a cross sectional survey on a random sample of male and female Syrian refugees residing in Lebanon. Data collection took place between September 2016 and February 2017 collected from 5 districts: Bekaa, Beirut and Mount Lebanon, North, and South Lebanon. Seven hundred and ninety-five Syrian refugees (males and females) were recruited from health care centers in areas with greatest concentration of Syrian refugees. The data were entered and analyzed using SPSS Version 22.0. Student *t* test was used for continuous variables and Chi-square test for categorical variables along with logistic regression models. Statistical significance was achieved at p -value < 0.05 .

Results Around 40% of the Syrian refugees currently use contraceptives. After adjusting for covariates, factors associated with use of contraceptives were discussing contraception use with a health care practitioner, originating from Damascus, planning for the desired number of children, and receiving any form of external assistance. On the other hand, factors associated with lack of use of contraceptives were residing in South Lebanon or Bekaa and living in unfinished buildings, work sites, or unused garage, with two or less rooms.

Conclusions Contraception use among Syrian refugees in Lebanon is multifactorial with some factors being modifiable. Efforts should be made to educate and motivate health care practitioners to discuss contraceptive use with refugees for optimal public health outcomes that would protect women from the risks of unintended pregnancies.

Keywords Reproductive health · Contraception · Family planning · Refugees · Syria · Lebanon

Significance Statement

What is Already Known on this Subject? Among the inadequate reproductive health services administered to refugee women are family planning services, thus increasing the women's risk of morbidity and mortality. Immigrant women are less likely to use contraceptives, yet very few studies have looked broadly into the sociocultural factors as well as variables affecting decision-making for their use. *What this Study Adds?* Contraception use among Syrian refugees in Lebanon is affected by multiple factors; some are modifiable

like discussion with a health care professional. Proper counseling on contraception plays a primordial role in improving the family planning practices of refugee population.

Introduction

Family planning services have been recognized as a major public health achievement of the twentieth century (Healthy People 2018). They ultimately aim at bringing about a healthy baby at a proper time, in proper numbers and with proper spacing (World Health Organization 1971), and are considered a human right that is central to gender equality and women's empowerment, as well as a key factor in reducing poverty (UNFPA 2018).

Factors affecting family planning practices vary geographically and socio-culturally. For example, in urban areas in Saudi Arabia (KSA) and Gulf, maternal age, age

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at marriage, parity, order of birth, education level, family size and type of infant feeding were significantly associated with birth spacing (Al-Almaie 2003; Al Nahedh 1999). On the other hand, the type of contraception used, regular attendance at family planning clinics and parity in Babol, northern Iran (Hajian-Tilaki et al. 2009) as well as child surviving and child sex (boys only or both boys and girls) in both Turkey (Koc 2000) and southern Jordan (Youssef 2005) were shown to be significantly correlated with birth spacing. These findings reflect that family planning decision-making is multifactorial encompassing socio-demographic, behavioral, attitudinal, and knowledge factors as well as the influence of the social network, partner characteristics, and recommendations from health care providers (Dehlendorf et al. 2010; Frost and Darroch 2008; Kottke et al. 2010; Selitsky et al. 2010; Whitaker et al. 2010; Yee and Simon 2010, 2011). Partner influence and relationship dynamics are further emerging as influential factors in contraceptive decision making (Grady et al. 2010), highlighting the need to better understand both males and females' perspectives of contraception use.

Following the 2012 London Summit on Family Planning, a landmark was reached in 2016 as some 300 million females in the world's poorest countries were using modern methods of contraception (Undie et al. 2017). Unfortunately, 2016 witnessed another landmark: the highest number of forcibly displaced people in recorded history (UNHCR 2016), with women and children constituting the most vulnerable groups among migrant populations (Raheel et al. 2012). Among the inadequate reproductive health services administered to refugee women are family planning services, thus increasing the women's risk of morbidity and mortality (Barnes and Harrison 2004; Hynes et al. 2002; Shaikh and Hatcher 2004). Several studies have shown that immigrant women are less likely to use contraceptives; however, very few have studied the effects of socioeconomic status and immigration background on contraceptive use (Larchanché 2012). Furthermore, data is scant on reproductive health and contraceptive use amongst refugees in general, particularly Syrian refugees in Lebanon.

More than eight years have passed since the onset of the Syrian conflict, with around 5.6 million Syrians being forced to flee their homes into neighboring countries, namely Turkey (64.5%), Jordan (11.8%), Iraq (4.4%) and Lebanon (16.4%) (Kawakibi 2013; UNHCR 2020). The latter's geographical location, language, and history have attracted over 1.5 million displaced Syrian, making it the recipient of the largest number of Syrian refugees per inhabitant. With this increase in Lebanon's pre-crisis population by more than 25%, extra strain has been put on all aspects of life in this developing country, making it unable to adequately meet the refugees' needs, including settlements, work opportunities, and access to health care (Kawakibi 2013). Such tough

conditions have especially jeopardized women's ability to receive adequate reproductive health services, including those related to family planning. Statistics from Lebanon reveal high birth rates among refugees, with major obstacles to the use of contraceptives related to the high cost, distance from services, inadequate quantity, and unavailability of desired contraceptive methods (United Nations Population Fund (UNFPA) 2013). However, sociocultural factors as well as variables affecting decision-making were not explored.

The aim of this study is to explore the factors that could predict contraceptive use among male and female Syrian refugees residing in Lebanon. This serves as a pivotal step into better understanding contraceptive use patterns and eventually developing interventions to increase the proportion of refugees using contraception methods, hence protecting women from the risks associated with unintended pregnancies.

Methods

Study Design

This study reports the results of a cross sectional survey conducted on a sample of Syrian refugees residing in Lebanon. Data collection took place between September 2016 and February 2017.

Study Respondents and Sample Size Calculations

The geographic areas with the greatest proportion of Syrian refugees in Lebanon were targeted: Bekaa, Beirut and Mount Lebanon, North and South Lebanon. From each of these areas, the primary health care centers (PHCCs) that serve 70 to 100 Syrian refugees daily were contacted for approval to participate. Those centers that approved were selected as sites for data collection.

The sample size was calculated by assuming the proportion of knowledge towards contraception to be 50%, expected margin of error to be 5% and the confidence level of 95% with power of 80%. It yielded a total sample size of 768 subjects; the number was rounded up to 800 subjects to account for any incomplete data. The proportion of subjects from each of the five targeted areas followed the refugees' distribution indicated by UNHCR (World Health Organization 2018): Bekaa 34%, Beirut and Mount Lebanon 29%, North Lebanon 24%, South Lebanon 11.5%. The sample was equally divided between males and females.

All Syrian male and female refugees present in each of the data collection sites were approached for voluntary participation. Male subjects were eligible if they were 18 years of age or older and were married. Female subjects were

eligible if they were between 18 and 49 years and married. Exclusion criteria included being single, divorced, or widowed, or trying to conceive. Female subjects who had undergone hysterectomy were also excluded.

Data Collection Questionnaire

The questionnaire was developed in English and translated to Arabic, the refugees' language. UNFPA provided technical support and reviewed the questionnaire. It was then pilot tested with a sample of 20 respondents for comprehension and cultural acceptability and modified accordingly.

The questionnaire included 70 items, grouped into five sections, as follows:

- a. Demographic information: age, number of marriages, age of first marriage, current governorate of residence in Lebanon, years in Lebanon, governorate of residence previously in Syria, UNHCR registration status, educational level, working status, spouse's working status, and family monthly income from work or additional sources.
- b. Living conditions: living space, number of rooms, number and relationship of people living in same place.
- c. Reproductive history: pregnancies in Syria and Lebanon, age at first pregnancy, number and sex of children (alive or dead), number of siblings, number of children with special needs, planned number of children and of unplanned pregnancy.
- d. Decision making around family planning: discussion with spouse about number of children wanted, and involvement of in-laws. Additional questions for female subjects included use of contraceptive methods without partners' knowledge.
- e. Refugees' knowledge and attitude towards contraceptive use. The results of the gender segregated KAP analysis will be discussed in another paper.

Statistical Analysis

The data were entered and analyzed using SPSS Version 22.0. Means and standard deviations were computed for continuous variables, while frequencies and percentages were calculated for categorical variables. For association or bivariate analysis, Student t-test and Chi-square test were used for continuous and categorical variables, respectively. Statistical significance was achieved at p -value < 0.05 . Logistic regression models were created to study the effect of demographic and reproductive variables on contraception use, with the latter serving as the dependent variable. Variables that were found to be associated with contraception use in the bivariate analysis with a p -value of 0.2 or less were included in the model. Adjusted odds ratios with 95% confidence intervals were used for interpretation and reporting of results.

Ethical Considerations

The study received ethical approval from the Institutional Review Board at the Beirut Arab University. The research was conducted in accord with prevailing ethical principles such that subjects were informed of the nature and objectives of the study and consented to participate freely and voluntarily prior to their inclusion in the study. The surveys were filled in a private area to ensure subject's privacy and confidentiality. Female data collectors interviewed female subjects while male data collectors interviewed male subjects.

Results

Demographic Characteristics of Respondents

Among the 795 Syrian refugees who participated in this study, 366 (46%) were males (Table 1). The mean (SD) age of the respondents was 32.2 (9.3) years. The majority of the respondents were residing in Aleppo, Syria (26.5%) and currently living in Bekaa (35.1%). On average, the respondents have been in Lebanon for 4.3 (2.1) years, with the majority being registered in UNHCR (86.1%). While 26.3% of the respondents were illiterate, only 3% reported completing a university degree. The majority of the males, respondents or husbands of the female respondents, were working (78.1%); however, only a third of the females, respondents or wives of the male respondents, were employed (18%). Around 21% of respondents reported a monthly family income below 200,000 LBP, while only 2% earned more than 1,000,000 LBP a month. When asked about receiving an extra income and/or assistance, 25.6% and 20.5% of respondents confirmed, respectively. Half of the surveyed refugees (49.3%) reported living in apartments, and 69.3% indicated that they live in spaces with two or less rooms. Slightly more than half (57%) of respondents reported having three or less children, and around three quarters indicated that they had two or less male or female children (73.8% or 75.7%, respectively). The majority of respondents reported that they were living with more than four other individuals (72.6%), most commonly their nuclear family (69.6%) (Table 1).

Among the total 795 surveyed Syrian refugees, 318 (40%) were current users of contraceptive methods. Variables that were significantly associated with the use of contraceptive method included gender, governorate of origin and of residence, UNHCR registration, educational level, males' working status, monthly income, presence of extra income, number of rooms, children, male children specifically, and that of people living together in the same space. Only a quarter of the male respondents (27.6%) reported that either they or their wives used at least one form of contraceptives, whereas half of the female respondents

Table 1 Demographic characteristics of male and female Syrian refugees by contraceptive use

Variables*		Total (n = 795)	Users (n = 318)	Non-users (n = 477)	p-value		
Gender of the respondents	Males	366	101 (27.6)	265 (72.4)	<0.001		
	Females	429	217 (50.6)	212 (49.4)			
Age** (years)		32.2 ± 9.3	32.7 ± 8.7	31.9 ± 9.7	0.237		
Governorate of origin [#]	Aleppo	210	95 (45.2)	115 (54.8)	0.002		
	Homos	153	76 (49.7)	77 (50.3)			
	Hama	68	24 (35.3)	44 (64.7)			
	Al-raqqah	66	19 (28.8)	47 (71.2)			
	Idlib	64	17 (26.6)	47 (73.4)			
	Damascus	55	32 (58.2)	23 (41.8)			
	Daraa	46	16 (34.8)	30 (65.2)			
	Al-hasakah	43	16 (37.2)	27 (62.8)			
	Rif Demashek	43	11 (25.6)	32 (74.4)			
	Deir e-Zor	21	5 (23.8)	16 (76.2)			
	Quneitra	9	0 (0.0)	9 (100.0)			
	Latakia	8	4 (50.0)	4 (50.0)			
	Tartus	7	2 (28.6)	5 (71.4)			
	Governorate of residence	Bekaa	279	80 (28.7)		199 (71.3)	<0.001
		Beirut and Mount Lebanon	230	114 (49.6)		116 (50.4)	
North Lebanon		195	91 (46.7)	104 (53.3)			
South Lebanon		91	33 (36.3)	58 (63.7)			
Duration of stay in Lebanon*** (years)		4.3 ± 2.1	4.4 ± 2.1	4.2 ± 2.1	0.302		
Registered in UNHCR [#]	Yes	684	289 (42.3)	395 (57.7)	0.002		
	No	110	29 (26.4)	81 (73.6)			
Educational level	Illiterate	209	72 (34.4)	137 (65.6)	0.048		
	Elementary	482	193 (40.0)	289 (60.0)			
	Secondary	80	40 (50.0)	40 (50.0)			
	University	24	13 (54.2)	11 (45.8)			
Male's working status ^a	Yes	621	265 (42.7)	356 (57.3)	0.004		
	No	174	53 (30.5)	121 (69.5)			
Female's working status ^b	Yes	143	62 (43.4)	81 (56.6)	0.366		
	No	652	256 (39.3)	396 (60.7)			
Monthly income (LBP) [#]	<200,000	166	54 (32.5)	112 (67.5)	0.027		
	200,000–500,000	376	156 (41.5)	220 (58.5)			
	500,000–1,000,000	234	96 (41.0)	138 (59.0)			
	>1,000,000	16	11 (68.8)	5 (31.3)			
Extra income ^{#c}	Yes	203	101 (49.8)	102 (50.2)	0.001		
	No	591	216 (36.5)	375 (63.5)			
Assistance ^{#d}	Yes	161	66 (41)	95 (59.0)	0.848		
	No	625	251 (40.2)	374 (59.8)			
Type of residence	Apartment/ house	392	189 (48.2)	203 (51.8)	<0.001		
	Informal settlement	260	82 (31.5)	178 (68.5)			
	Other ^e	143	47 (32.9)	96 (67.1)			
Number of rooms	≤ 2 rooms	551	190 (34.5)	361 (65.5)	<0.001		
	> 2 rooms	244	128 (52.5)	116 (47.5)			
Number of children (parity)	≤ 3 children	453	150 (33.1)	303 (66.9)	<0.001		
	> 3 children	342	168 (49.1)	174 (50.9)			
Number of male children	≤ 2 male children	587	213 (36.3)	374 (63.7)	<0.001		
	> 2 male children	208	105 (50.5)	103 (49.5)			

Table 1 (continued)

Variables*		Total (n = 795)	Users (n = 318)	Non-users (n = 477)	p-value
Number of female children	≤ 2 female children	602	231 (38.4)	371 (61.6)	0.098
	> 2 female children	193	87 (45.1)	106 (54.9)	
Number of people in same space	≤ 4 people	218	55 (25.2)	163 (74.8)	< 0.001
	> 4 people	577	263 (45.6)	314 (54.4)	
People living together [#]	Nuclear family	551	210 (38.1)	341 (61.9)	0.169
	Extended family	221	100 (45.2)	121 (54.8)	
	Family and non-relatives	20	7 (35.0)	13 (65.0)	

*Results of variables are indicated as N (%) unless otherwise stated

**Results of these variables are reported as Mean (SD)

[#]The total of these variables does not sum up to 795 due to missing data

^aThe male's working status was computed using the working status of the male respondents and the husbands of the female respondents

^bThe female's working status was computed using the working status of the female respondents and the wives of the male respondents

^cExtra Income: Any form of external assistance

^dAssistance: If respondents get any type of assistance (financial, health services...) that increases based on their number of children

^eOther includes unfinished buildings, work site, unused garage, etc.

(50.6%) reported doing so. Users of contraceptive methods were of higher educational levels (54.2%) and monthly income (68.8%).

Reproductive Health-Related Decision Making

Table 2 reflects the reproductive health-related decision making of the respondents. Only a quarter of the refugees reported ever planning the number of children that they want to have (23.3%), or discussing the desired number of children with their partners (25.4%) or even with a health care practitioner (28%). A slightly lower percentage reported that their decision to use contraceptives was influenced by others (16.6%). Among the 185 respondents who have ever planned the desired number of children, 19% have more children than planned. Almost 28% of the respondents reported having at least one unplanned pregnancy. Among the 429 female respondents, around 21% reported that they would use contraceptives without informing their husbands. Half of the respondents (51.2%) reported having to pay for the contraceptive methods out of pocket, and 33% reported living more than a 30-min walking distance away from the closest health care center.

Among the factors studied, having a planned number of children or an unplanned pregnancy, discussing the desired number of children with the partner, taking the decision alone to use contraceptives among female respondents, being influenced by others, discussion family planning services with health care practitioner and the covered price of contraceptives were significantly associated factors with our outcome of interest, contraceptive use.

Multivariate Analysis Results

Logistic regression analysis revealed associations of socio-demographic and reproductive health factors with contraception use practices. In the unadjusted bivariate analyses, gender, governorate of origin and that of residence, registration in UNHCR, educational level, male's working status, monthly income, reception of extra income, type of residence and number and relationship of people living in the same space were associated with current use of contraceptive use. In addition, among the reproductive-related factors, total number of children, as well as that of male and female children, plan for number of children and occurrence of unplanned pregnancies were also associated with current use of contraceptive use. Finally, discussion with partner and/or health care practitioner, being influenced by others, and coverage of contraceptive methods were also among the factors impacting contraceptive use.

A number of factors remained significantly associated with contraceptive use after adjusting for other covariates. Refugee respondents originating from Damascus had higher likelihood of using contraceptives (AOR 3.64, 95% CI 1.41, 9.53). On the other hand, respondents reporting currently residing in South Lebanon or Bekaa were less likely to use contraceptives (AOR 0.53, 95% CI 0.29, 0.99; AOR 0.38, 95% CI 0.22, 0.66; respectively). Similarly, not receiving extra income (AOR 0.61, 95% CI 0.39, 0.94) and living in unfinished buildings, work sites, or unused garage (AOR 0.57, 95% CI 0.34, 0.94) decreased the likelihood of using contraceptive methods among the respondents. Nevertheless, refugees that indicated living in spaces with more than two rooms were almost twice as likely to use contraceptives

Table 2 Reproductive health-related decision making of male and female Syrian refugees by contraception use

Variables*		Total (n = 795)	Users (n = 318)	Non-users (n = 477)	p-value
Plan for number of children	Yes	185	106 (57.3)	79 (42.7)	< 0.001
	No	610	212 (34.8)	398 (65.2)	
Number of children compared to plan ^a	Less than planned	81	47 (58.0)	34 (42.0)	0.970
	Same as planned	69	39 (56.5)	30 (43.5)	
	More than planned	34	19 (55.9)	15 (44.1)	
Unplanned pregnancy [#]	Yes	222	124 (55.9)	98 (44.1)	< 0.001
	No	572	194 (33.9)	378 (66.1)	
Discussion with partner	Yes	202	112 (55.4)	90 (44.6)	< 0.001
	No	593	206 (34.7)	387 (65.3)	
Decision alone for contraception use ^b	Yes	89	56 (62.9)	33 (37.1)	0.009
	No	336	159 (47.3)	177 (52.7)	
Decision influenced by others [#]	Yes	131	64 (48.9)	67 (51.1)	0.023
	No	658	251 (38.1)	407 (61.9)	
Discussion with health care practitioner	Yes	223	131 (58.7)	92 (41.3)	< 0.001
	No	572	187 (32.7)	385 (67.3)	
Coverage of contraceptive price [#]	Out of pocket	407	172 (42.3)	235 (57.7)	0.008
	Partial payment	124	34 (27.4)	90 (72.6)	
	Free	181	78 (43.1)	103 (56.9)	
Walking distance from home [#]	< 10 min	118	48 (40.7)	70 (59.3)	0.886
	10–30 min	412	168 (40.8)	244 (59.2)	
	> 30 min	262	102 (38.9)	160 (61.1)	

*Results of variables are indicated as N (%) unless otherwise stated

[#]The total of these variables does not sum up to 795 due to missing data

^aAsked only for respondents who said they planned the number of children they want to have, so total is 185

^bAsked only for female respondents, so total is 429

(AOR 1.97, 95% CI 1.34, 2.89). Furthermore, respondents who reported not having planned the number of children that they desire to have (AOR 0.59, 95% CI 0.37, 0.96) and those who haven't discussed family planning with their health care practitioners (AOR 0.51, 95% CI 0.35, 0.75) were almost half as likely to use contraceptives as their counterparts (Table 3).

Discussion

Several studies have reported that fertility patterns among refugees vary. While some reported an increased fertility to replace deceased children or to satisfy their desire to repopulate as they move to healthier and more stable environments, others found decreased fertility owing to uncertainty about the future, economic instability, or marital separation (Aptekman et al. 2014).

Our finding of approximately 40% prevalence of contraceptive use seem to reflect the effect of the culture on the contraceptive decision. It is slightly lower than the national average of contraceptive use in Syria before the start of

the war in 2011, estimated at 47% among married women of reproductive age (Rutgers 2016). This figure is also lower than the prevalence of contraceptive use among the host Lebanese population, which was 53.7% in 2009 (The World Bank 2018). A recent study conducted among Syrian refugees and service providers in Bekaa, Lebanon (Kabakian-Khasholian et al. 2017) showed that refugee women expressed a desire for having four to six children in their families, as this is an acceptable social norm in the Syrian culture. In addition, the women reported that the number of children is also determined by the importance attached to having at least one male born in the family, something that is perceived to guarantee the continuation of the family name. After the conflict in 2011, the culture of having a big family persisted for some of the women, especially that they had the perceived need to replace the children lost to war, where observations of high fertility rates among Syrian refugees were commonly expressed by clinicians providing reproductive health services in host communities in Lebanon. However, other refugee women expressed that the difficult living conditions forced them to limit the number of children they have to no more than two.

Table 3 Unadjusted and adjusted odds ratios of current contraception use by socio-demographic and reproductive health data of the respondents

Variables		Unadjusted OR	95% CI	Adjusted OR	95% CI
Gender of respondents	Males	1.00	–	1.00	–
	Females	2.69	(2.00, 3.62)	1.54	(0.91, 2.06)
Governorate of origin	Daraa	1.00	–	1.00	–
	Deir e-Zor	0.59	(0.18, 1.89)	0.60	(0.15, 2.38)
	Aleppo	1.55	(0.80, 3.01)	1.19	(0.54, 2.60)
	Hama	1.02	(0.47, 2.24)	1.02	(0.41, 2.52)
	Al-hasakah	1.11	(0.47, 2.64)	1.31	(0.46, 3.73)
	Homs	1.85	(0.93, 3.67)	1.65	(0.72, 3.76)
	Idlib	0.68	(0.30, 1.54)	0.79	(0.30, 2.05)
	Quneitera	0.00	(0.00, 0.00)	<0.001	(0.00, 0.00)
	Latakia	1.88	(0.41, 8.51)	2.13	(0.38, 12.11)
	Al-raqqah	0.76	(0.34, 1.70)	1.05	(0.40, 2.76)
	Rif Demashek	0.65	(0.26, 1.61)	0.77	(0.26, 2.29)
	Damascus	2.61	(1.16, 5.86)	3.64	(1.41, 9.43)
	Tartus	0.75	(0.13, 4.31)	0.57	(0.07, 4.68)
Governorate of residence	Beirut and Mount Lebanon	1.00	–	1.00	–
	South	0.58	(0.35, 0.95)	0.53	(0.29, 0.99)
	North	0.89	(0.61, 1.31)	0.60	(0.35, 1.04)
	Bekaa	0.41	(0.28, 0.59)	0.38	(0.22, 0.66)
Registered in UNHCR	Yes	1.00	–	1.00	–
	No	0.49	(0.31, 0.77)	0.58	(0.33, 1.03)
Educational level	Illiterate	1.00	–	1.00	–
	Elementary	1.27	(0.91, 1.78)	1.28	(0.84, 1.96)
	Secondary	1.90	(1.13, 3.21)	1.40	(0.73, 2.70)
	University	2.25	(0.96, 5.27)	1.57	(0.55, 4.52)
Male's working status	Yes	1.00	–	1.00	–
	No	0.59	(0.41, 0.84)	0.82	(0.43, 1.56)
Monthly income (LBP)	< 200,000	1.00	–	1.00	–
	200,000–500,000	1.47	(1.00, 2.16)	1.14	(0.71, 1.84)
	500,000–1,000,000	1.44	(0.95, 2.19)	0.96	(0.55, 1.69)
	> 1,000,000	4.56	(1.51, 13.79)	1.63	(0.39, 6.73)
Extra income*	Yes	1.00	–	1.00	–
	No	0.58	(0.42, 0.80)	0.61	(0.39, 0.94)
Type of residence	Apartment/ house	1.00	–	1.00	–
	Informal settlement	0.49	(0.35, 0.68)	0.63	(0.39, 1.03)
	Other***	0.52	(0.35, 0.78)	0.57	(0.34, 0.94)
Number of rooms	≤ 2 rooms	1.00	–	1.00	–
	> 2 rooms	0.48	(0.35, 0.65)	1.97	(1.34, 2.89)
Number of children	≤ 3 children	1.00	–	1.00	–
	> 3 children	1.95	(1.46, 2.60)	1.69	(0.99, 2.86)
Number of male children	≤ 2 male children	1.00	–	1.00	–
	> 2 male children	1.79	(1.30, 2.46)	1.24	(0.78, 1.99)
Number of female children	≤ 2 female children	1.00	–	1.00	–
	> 2 female children	1.32	(0.95, 1.83)	0.78	(0.47, 1.29)
Number of people in same space	≤ 4 people	1.00	–	1.00	–
	> 4 people	2.48	(1.76, 3.51)	1.40	(0.86, 2.30)
People living together	Nuclear family	1.00	–	1.00	–
	Extended family	1.34	(0.98, 1.84)	0.88	(0.58, 1.35)
	Family and non-relatives	0.87	(0.34, 2.23)	0.72	(0.23, 2.25)

Table 3 (continued)

Variables		Unadjusted OR	95% CI	Adjusted OR	95% CI
Plan for number of children	Yes	1.00	–	1.00	–
	No	0.40	(0.28, 0.56)	0.59	(0.37, 0.96)
Unplanned pregnancy	Yes	1.00	–	1.00	–
	No	0.41	(0.30, 0.56)	0.68	(0.45, 1.02)
Discussion with partner	Yes	1.00	–	1.00	–
	No	0.43	(0.31, 0.59)	0.76	(0.47, 1.22)
Discussion with health care practitioner	Yes	1.00	–	1.00	–
	No	0.34	(0.25, 0.47)	0.51	(0.35, 0.75)

*p-value < 0.05; **p-value < 0.01, ***p-value < 0.001

§The total of these variables does not sum up to 795 due to missing data

*Extra Income: Any form of external assistance

**Assistance: If respondents get any type of assistance (financial-health services...) that increases based on their number of children

***Other includes unfinished buildings, work site, unused garage, etc.

Furthermore, the same study concluded that camp organization and access to health services in the host country influence refugees' fertility practices and their demand for contraceptive services (Kabakian-Khasholian et al. 2017). This also confirms with our finding that the area and type of residence were major factors that influenced use of contraceptive methods, even after adjusting for all other covariates. According to the study conducted in Lebanon, service providers explained that a large number of the refugee Syrian population in the West Bekaa had been displaced from rural areas in Syria where large families are desired (Kabakian-Khasholian et al. 2017).

Similarly, we found that respondents who reported living in harsher socioeconomic conditions were less likely to use contraceptives. In another study by Masterson et al. (2014) of 425 Syrian refugee women in Lebanon, only 34.5% of the women reported using a contraceptive method, which is comparable to the prevalence rate of 40% calculated in our study. Identified barriers to contraceptive use in the Masterson et al. paper were cost, transportation to service provision points and unavailability of services (Masterson et al. 2014). The unaffordability of contraceptives in the Lebanese privatized health system compared to their free provision in Syria limited access to family planning services (Kabakian-Khasholian et al. 2017). This is especially true given that the Lebanese government banned the formation of official camps for the Syrian refugees, contrary to other neighboring countries. Therefore, Syrian refugees in Lebanon either struggle with the high rent that they need to pay for the apartments or live in unfinished buildings. These economic difficulties are often exacerbated by the limited health care access, especially for the refugees who are not registered in UNHCR.

In Lebanon, Syrian women report gynecologic problems such as menstrual irregularity, reproductive tract infection,

dysmenorrhea, and some combination of the above conditions (Masterson et al. 2014). Despite that, the majority of the refugees do not visit a gynecologist except when they are pregnant, mainly because of the high costs (Samari 2017). UNHCR covers 75% of the cost of obstetric and emergency hospital care for refugees. But increasingly, refugees cannot gather their 25% and/or cannot travel the distances required to access reproductive services (Masterson et al. 2014). Furthermore, the women have expressed a need for free or affordable contraceptives. This is in alignment with the health care practitioners' claims of shortage in contraceptives for free distribution in health centers to cover the need of Syrian refugees in the Bekaa area. As one of the interviewed nurses in a public health center said: "We used to have good supply of pills and condoms but no more. There are a lot of Syrian refugees coming and asking for free contraception and we don't have any more to offer." (Kabakian-Khasholian et al. 2017).

Finally, those who did not have a plan for the desired number of children, and who had not discussed contraception use with a health care practitioner were also less likely to use contraceptives. In the study by Kabakian-Khasholian et al. (2017), women also pointed to the judgmental approaches of care providers, which contributed to their perception of low-quality care received. The aforementioned reasons influenced their preference for Syrian health care providers, where even some mentioned seeking care with a female Syrian gynecologist practicing in Bekaa. Unfortunately, the qualitative analysis among health care providers in the same study revealed negative attitudes that confirm women's reported experiences of discriminatory treatment when seeking reproductive health care. "They are irresponsible and ignorant. Many of them do not commit to appointments. They really give us a hard time. They exhaust us." (physician, male, health center) (Kabakian-Khasholian et al.

2017). These obstacles might explain the fact that the majority of Syrian refugees (72%) interviewed in our study do not discuss contraception and family planning services with health care practitioners in Lebanon. Coupled with the lack of knowledge about reproductive health services in general and contraceptive use in specific (Samari 2017), these obstacles justify the higher proportion of contraceptive non-users among those who do not discuss this with health care practitioner, a significant finding which persisted even after adjusting for other variables. To the best of our knowledge, this study provides unique data on the factors predictive of contraceptive use among Syrian refugees residing in Lebanon.

Limitations of this Study

Our study has some limitations. It employed a cross-sectional design and was done on a convenient sample of refugees attending PHCCs. Although this might limit the generalizability of the results, the selection of subjects from two different PHCCs in each governorate is expected to increase diversity. Furthermore, refugees attending PHCCs might have different characteristics from those who do not, hence contributing differentially to the study of predictor in these two samples. Nevertheless, this study provides an insight into a prevailing situation of contraceptive use amongst Syrian refugees in Lebanon since the wider population of refugees is difficult to access and sample. In the survey, we believe that reporting bias might be implicated especially when it comes to questions related to income and financial aid. Participants who denied receiving any help through money or services could have been worried that they would lose the chance of getting other aids even though the purpose of the survey was explained to each participant.

Conclusions

Contraceptive use by Syrian refugees in Lebanon is a multifactorial issue, affected by living conditions, area of residence, financial and economic circumstances, prior planning of the number of children, in addition to discussion with a health care professional which remains one of its most significant predictors. Putting more effort on providing comprehensive health care services, including proper counseling, plays a primordial role in improving the family planning practices of refugee population, prevents unintended pregnancy, and protects the lives of many women who face increased health risks when giving birth. Increasing focus to invest in training health care professionals on proper communication and counseling for refugees remains of paramount importance.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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