

Determinants of family planning use among currently married women aged 15-49 years and their partners: a secondary analysis based on the Egypt Demographic and Health Surveys, 2000 and 2008

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Abstract

Background: Determinants of family planning (FP) use were studied in multiple researches. Strong associations were recognized between FP use and some socio-demographic, sociocultural and socio-economic characteristics. **Objective:** to identify determinants of FP use and other factors that may influence FP use and decision making. **Method:** Secondary analysis of data from the Egypt Demographic Health Survey (EDHS) 2000 and 2008. Pearson's Chi-square (χ^2), two sample *t* test and regression analyses were performed. **Results:** The contraceptive prevalence rate in 2000 & 2008 was 48.5% & 51.6% respectively. The significant predictors of FP use in both EDHS were; participant age, residence, husband education and desire for more children. FP use was steadily increasing with the increase of respondent's education from 42.9% to 56.4%. Partner's education significantly influenced FP use; it increased from 40.6% to 56.8%. FP decision was determined by: respondent's age, education, work & place of residence, and partner's education in both surveys. **Conclusion:** Respondents' age, work & education, husbands' education, and contact with healthcare workers were FP and fertility determinants. Therefore we recommend avoiding early marriage, encouraging education for girls and boys, improving the outreach services, and empowering women with more work opportunities.

Keywords: *Secondary analysis, determinants, modern family planning use, DHS, Egypt*

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Introduction

Egypt is suffering a population problem due to many causes, of which are high fertility and low birth control. Egypt has made an impressive progress towards its population policy goals. From 1980 – 2005, fertility rates in Egypt have decreased and contraceptive use levels had more than doubled.¹ Despite this progress, recent increase in contraceptive use hasn't been accompanied by a significant reduction in the number of children per family. There are also differences in contraceptive uses among different geographic areas of Egypt.² Family planning (FP) allows women to

space births, and longer birth intervals, reduce maternal and infant mortality rates.^{3,4} Promotion of FP and contraceptive use is highly adopted by the international community.⁵⁻⁷ FP as a health and development strategy has not been promoted consistently everywhere. Low rates of contraceptive use and high fertility rates persist in most countries of sub-Saharan Africa.^{8,9} Husband support is a significant predictor of the likelihood that women will attempt to use a contraceptive method.^{10,11} During the past 15 years, many researchers in the reproductive health field have come to

appreciate the need for the constructive involvement of men in FP programs and services. A challenge confronting the redirection of FP services toward greater male involvement and couples' collective decision making and how to procure the participation of men effectively. Given that men tend to obtain much of their reproductive health information from peers.¹²

Determinants of FP use were studied in multiple researches. Strong associations were recognized between FP use and some socio-demographic, sociocultural and socio-economic characteristics of women. Based on the setting in which the studies were conducted results were either comparable or different. It was also shown that, use of contraceptive methods were more in women of older age group. Education was identified in other studies to be linked with FP use.¹³⁻

¹⁷ The national population policy aimed to raise FP practice to 67.3% in 2012; however in 2014 the national survey reported that FP use among currently married women age 15-49 reached 58.5%.¹⁸ Assiut governorate is among others facing difficulties to achieve higher levels of Contraceptive Prevalence Rate (CPR) so, more innovative approaches need to be implemented in order to bridge the gap between governmental and national levels of CPR. Previous researches on women and FP have focused on how various aspects of women's lives, such as education and employment predict their use of FP. This secondary analysis was carried out to look at neglected aspect – though important- that might reverses the equation when you find out other factors or determinants that would influence FP use and decision making.

The Objective of this study is to identify determinants of FP use and factors that may influence FP use and decision making in Egypt.

Method

This is a secondary analysis work of a number of variables in two data sets of Egypt Demographic and Health Survey (EDHS) 2000 and 2008.

The target population is Currently married women aged 15-49 years and their partners from the previously mentioned data sets.

The two EDHS sets included a total of 32,100 (15573&16527) respectively of current married females and their partners. Detailed information on EDHS sampling and data collection is available in previous surveys' reports^(18- 20). We used EGIR41SV. SAV (SPSS data file) for 2000 and EGIR5SV. SAV (SPSS data file) for 2008. These files were researchers personal files that were created and contained the variables related to women aged 15– 49 years.

We used household and individual-level data from EDHS program. Data on FP were collected by asking about several variables regarding FP such as ever use, current use, intention for future use and underlying causes and determinants. The EDHS household questionnaire collects data on sex, age, education, and household headship, relationship to the household head for all household members, household possessions and household access to various amenities. The EDHS women's questionnaire collects data for women age 15 to 49 years on variety of characteristics, including age, marital status, parity, contraceptive use, education, employment and empowerment status, as well as their husband's education, occupation and alcohol consumption.

Ethical considerations:

The module used by EDHS and its implementation conform to the recommendations of the World Health Organization for ethical collection of data on FP and fertility. The approval to access both 2000 and 2008 raw data was taken from EDHS administrators after filling in a registration form. Then we got authorized to download data from the

Table (1): Demographic determinants of modern family planning use EDHS 2000 (N=15,573)

Determinants	No Method (%)	Folkloric/traditional (%)	Modern (%)	*P
Age groups				
15-19	87.3	1.3	20.3	
20-24	60.0	2.0	38.0	
25-29	46.5	2.5	51.0	
30-34	37.9	2.2	59.8	<0.001
35-39	37.8	1.9	60.3	
40-44	45.6	1.8	52.5	
45-49	66.3	1.7	32.0	
Total	49.4	2.0	48.5	
Place of residence				
Urban	44.8	2.2	53.0	<0.001
Rural	53.4	1.9	44.7	
Total	49.4	2.0	48.5	
Women's education				
No education	55.5	1.6	42.9	
Primary	48.8	1.8	49.4	
Secondary	44.2	2.2	53.6	<0.001
Higher	39.5	4.1	56.4	
Total	49.4	2.0	48.5	
Husband's education:				
No education	58.0	1.4	40.6	
Primary	47.6	1.7	50.7	
Secondary	46.8	2.1	51.0	<0.001
Higher	39.5	3.7	56.8	
Total	49.4	2.0	48.5	
Women working status				
Working	41.7	2.9	55.4	<0.001
Not working	51.0	1.8	47.1	
Total	49.4	2.0	48.5	

*chi square test was used

Table (2): Relationship between number of sons at home and husband desire for children EDHS, 2000

Husband Desire	No.	Mean ±SD	Mean Difference	95% CI
Wants more	2778	1.6±1.4		
Other desires	12795	1.5±1.2	0.095	0.041-0.148

t = 3.4, P = 0.001

* Mean number of sons at home. ** t: value for the independent sample T- test.

DHS on-line archive. Before we accessed the data we followed the authorization instruction by EDHS administrators at measure DHS online. We downloaded the data files in the SPSS and STATA formats. To be able to understand the codes we had to download the recodes. Then we looked through the recodes and selected certain relevant variables to be

included in the analysis. Then created our own data file containing the selected variables in addition to some basic information variables such as case id, sample weight....etc.

Data management and analysis:

Data was analyzed using SPSS (version 16). The frequencies, percentages, the mean and standard deviation were

Table (3): Logistic regression analysis of modern family planning use of EDHS, 2000

Determinants	B	SE	Wald	DF	Sig.	Odds ratio
Participant age group (reference group; 15-19)						
20-24	0.61	0.11	30.30	1	<0.001	0.5
25-29	0.26	0.06	17.81	1	<0.001	1.3
30-34	0.79	0.06	138.03	1	<0.001	2.2
35-39	1.15	0.06	372.13	1	<0.001	3.2
40-44	1.17	0.06	383.59	1	<0.001	3.2
45-49	0.85	0.06	190.88	1	<0.001	0.5
Residency (Reference group; urban)						
Rural	0.20	0.04	32.68	1	<0.001	1.2
Husband's education (reference group; no education)						
Primary	2.61	1.03	6.39	1	0.011	13.6
Secondary	2.97	1.03	8.32	1	0.004	19.7
Higher	3.04	1.03	8.65	1	0.003	20.84
	-3.69	1.03	12.79	1	<0.001	0.03
Nagelkerke R ² : 0.090; Overall percentage: 61.1; Significance of model: <0.001						

Table (4): Determinants of family planning decision making EDHS 2000

Determinants	Women role in FP decision	Modern FP use		*P value
		User	Non user	
Age groups of highly educated:				
15-19	-Decide	100.0	0.0	0.001
	-Not Decide	0.0	100.0	
20-24	-Decide	94.7	2.7	<0.001
	-Not Decide	5.3	97.3	
25-29	-Decide	96.3	6.1	<0.001
	-Not Decide	3.7	93.9	
30-34	-Decide	92.0	3.2	<0.001
	-Not Decide	8.0	96.8	
35-39	-Decide	93.6	7.1	<0.001
	-Not Decide	6.4	92.9	
40-44	-Decide	93.1	14.9	<0.001
	-Not Decide	6.9	85.1	
45-49	-Decide	94.8	7.9	<0.001
	-Not Decide	5.2	92.1	
Place of residence:				
Urban	-Decide	96.0	6.2	<0.001
	-Not Decide	4.0	93.8	
Rural	-Decide	95.2	3.7	<0.001
	-Not decide	4.8	96.3	
Wealth Index:				
Poorest	-Decide	92.7	7.3	<0.001
	-Not decide	3.9	96.1	
Poor	-Decide	95.6	4.4	<0.001
	-Not decide	4.1	95.9	
Middle	-Decide	95.9	4.1	<0.001
	-Not decide	4.2	95.8	
Richer	-Decide	97.1	2.9	<0.001
	-Not decide	4.8	95.2	
Richest	-Decide	96.1	3.9	<0.001
	-Not decide	7.0	93.0	

*chi square test was used

computed. The descriptive statistical technique was used at the univariate level to describe the characteristics of the sample. Bivariate analysis using Pearson's Chi-square (χ^2) test to examine the association between the dependent variable and the explanatory variable and two sample *t* test was also used when appropriate. Factors that showed unadjusted odds ratio (OR) with a P-value <0.25 (as the lower the p-value the most likely to be meaningful) were subjected to multivariate logistic regression analysis. Separate models were fitted for each survey. The 5% level was chosen as the level of significance and 95% confidence interval.

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Results

Demographic and fertility determinants of family planning (DHS 2000)

More than half of women (53.0%) residing urban place used modern FP methods compared to about 45% of rural women. It was found that there was a positive and significant relationship between women's educational level and modern FP use which was steadily increasing with the increase of respondent's educational level from 42.9% to 56.4%. It was noticed that partner's education positively and significantly influenced modern contraceptive use as it increased from 40.6% to 56.8% (no education – higher education respectively). It was also found that working for cash was significantly associated with more use of FP methods which could be attributed to working as

an empowering factor for women (table 1).

Having recent contact with FP workers was positively associated with modern FP use. However, being visited by FP worker was associated with slightly higher percentage of modern FP use compared to visiting the health facility (56.3% & 55.1% respectively). In both the differences were statistically significant (*p* value <0.001), data not shown. Table 2, shows the number of sons at home was significantly associated with husband's desire for children where the mean number of sons at home for husbands' who want more children was 1.6 ± 1.4 compared to 1.5 ± 1.2 for those who wanted either the same, less or do not know the number of desired children. In logistic regression model for EDHS 2000, the significant predictors of modern FP use were respondent's age group, residence, and partner's education ($P \leq 0.05$). Partner's education was the strongest predictor as FP use was more than 20 times among women whose partner received higher educational levels compared to those with no education. Respondent's age groups (35-44) were 3.2 times more likely to use FP compared to women in age group (15-19), rural women were 1.2 times more likely to use FP compared to urban women, after controlling for all other variables, the overall percentage of the model was 61.1% ($P < 0.001$) (table 3).

Family planning decision (DHS 2000)

Table 4 shows that with increasing in the age of non-educated respondents, there was a steady increase in both modern FP use and respondent's role in FP decision till the age of 34 where it started to decline. However; this increase was only significant in age group (25-29). The decline afterwards could be explained by natural decline in fertility by this age

Table (5): Demographic determinants of modern family planning use EDHS 2008 (N=16527)

Determinants	No method (%)	Folkloric/traditional (%)	Modern (%)	*P value
Age groups:				
15-19	78.8	3.1	18.1	
20-24	57.6	4.2	38.1	
25-29	44.5	3.4	52.0	
30-34	37.2	2.9	59.9	<0.001
35-39	33.4	2.2	64.5	
40-44	36.5	1.8	61.7	
45-49	58.4	1.1	40.5	
Total	45.7	2.7	51.6	
Type of place of residence:				
Urban	42.4	2.7	54.9	<0.001
Rural	48.0	2.7	49.3	
Total	45.7	2.7	51.6	
Women's education:				
No education				
Primary	50.5	2.2	47.3	
Secondary	45.4	2.5	52.1	<0.001
Higher	42.7	2.9	54.4	
Total	43.7	3.6	52.7	
	45.7	2.7	51.6	
Husband's education:				
No education	53.1	2.3	44.5	
Primary	43.9	2.6	53.6	
Secondary	44.3	2.6	53.1	<0.001
Higher	40.9	3.8	53.3	
Total	45.7	2.7	51.6	
Women working status				
Working	40.6	3.2	56.2	<0.001
Not working	64.7	2.6	50.7	
Total	45.7	2.7	51.6	
Wealth Index:				
Poorest	51.3	3.6	45.1	
Poor	49.6	2.4	48.0	
Middle	44.5	2.5	53.0	<0.001
Richer	43.3	2.1	54.6	
Richest	39.3	3.0	57.8	
Total	45.7	2.7	51.6	

*chi square test was used

Table (6): Relationship between number of sons at home and husband desire for children EDHS, 2008

Husband Desire	Frequency	*Mean \pm SD	Mean Difference	95%CI
Wants more	3804	1.42 \pm 1.2		
Other desires	12723	1.34 \pm 1.1	0.086	0.043-0.129

t = 3.9, P value = 0.001

* Mean number of sons at home. ** t: value for the independent sample T- test.

Table (7): Logistic regression analysis of modern family planning use of EDHS, 2008

Determinants	B	SE	Wald	DF	Sig.	Odds ratio
Respondent share in FP decision (reference group; Shared)						
Did not share	6.23	0.08	6506.3	1	<0.001	506.8
Participant age group (reference group; 15-19):						
20-24	-1.5	0.24	42.49	1	<0.001	0.2
25-29	-0.85	0.15	34.1	1	<0.001	0.4
30-34	-0.45	0.14	10.7	1	0.001	0.6
35-39	0.26	0.14	3.2	1	0.07	1.3
40-44	0.5	0.15	13.0	1	<0.001	1.7
45-49	0.5	0.14	12.9	1	<0.001	1.7
Residency (Reference group; urban)						
Rural	0.25	0.08	9.86	1	0.002	1.3
Husband's education (reference group; no education)						
Primary	-0.21	0.13	2.49	1	0.1	0.8
Secondary	0.09	0.14	0.42	1	0.5	1.1
Higher	0.11	0.12	0.8	1	0.3	1.1
Nagelkerke R ² : 0.865, Overall percentage: 95.8, Model Significance: <0.001						

Table (8): Determinants of family planning decision making EDHS, 2008

Determinants	Women role in FP decision	Modern FP use		*P value
		User	Non user	
Age groups of non-educated:				
15-19	-Decide	90.3	2.1	<0.001
	-Not Decide	9.7	97.9	
20-24	-Decide	95.2	7.3	<0.001
	-Not Decide	4.8	92.7	
25-29	-Decide	95.1	6.4	<0.001
	-Not Decide	4.9	93.6	
30-34	-Decide	95.9	7.5	<0.001
	-Not Decide	4.1	92.5	
35-39	-Decide	96.1	3.8	<0.001
	-Not Decide	3.9	96.2	
40-44	-Decide	95.8	1.3	<0.001
	-Not Decide	4.2	98.7	
45-49	-Decide	95.6	0.4	<0.001
	-Not Decide	4.4	99.6	
Place of residence:				
Urban	-Decide	96.0	4.0	<0.001
	-Not Decide	6.2	93.8	
Rural	-Decide	95.2	4.8	<0.001
	-Not decide	3.7	96.3	
Wealth Index:				
Poorest	-Decide	92.7	7.3	<0.001
	-Not decide	3.9	96.1	
Poor	-Decide	95.6	4.4	<0.001
	-Not decide	4.1	95.9	
Middle	-Decide	95.9	4.1	<0.001
	-Not decide	4.2	95.8	
Richer	-Decide	97.1	2.9	<0.001
	-Not decide	4.8	95.2	
Richest	-Decide	96.1	3.9	<0.001
	-Not decide	7.0	93.0	

**chi square test was used*

Table (9): Effect of partner's education on decision making for using modern contraceptive methods in EDHS2000 &2008

Partner's education	Decision maker for contraceptive use (%)			
	respondent	husband	joint	others
No education	16.1	3.6	80.2	0.1
Primary	14.7	3.6	81.5	0.2
Secondary	11.4	2.0	86.5	0.0
Higher	7.8	2.4	89.6	0.2
Total	12.4	2.7	84.9	0.1

**p* value <0.001

*chi square test was used

Table (10): Demographic characteristics of modern contraceptive use in EDHS 2000& 2008

characteristics	EDHS 2000		EDHS 2008	
	No method	Modern	No method	Modern
Age groups:				
15-19	79.7	20.3	81.9	18.1
20-24	62.0	38.0	61.9	38.1
25-29	49.0	51.0	48.0	52.0
30-34	40.2	59.8	40.1	59.9
35-39	39.7	60.3	35.5	64.5
40-44	47.5	52.5	38.3	61.7
45-49	68.0	32.0	59.5	40.5
Type of place of residence:				
Urban	47	53.0	45.1	54.9
Rural	55.3	44.7	50.7	49.3
Women's education:				
No education	57.1	42.9	52.7	47.3
Primary	50.6	49.4	47.9	52.1
Secondary	46.4	53.6	45.6	54.4
Higher	43.6	56.4	47.3	52.7
Husband's education:				
No education	59.4	40.6	55.5	44.5
Primary	49.3	50.7	46.4	53.6
Secondary	49	51.0	46.9	53.1
Higher	43.2	56.8	46.7	53.3
Women working status				
Working	44.6	55.4	43.8	56.2
Not working	52.9	47.1	49.3	50.7
Total (%)	51.5	48.5	48.4	51.6

Table (11): Fertility characteristics of modern contraceptive use in EDHS 2000& 2008

Characteristics	EDHS 2000		EDHS 2008	
	No method	Modern	No method	Modern
Visited by FP worker:				
• Yes	43.7	56.3	41.3	58.7
• No	51.8	48.2	48.8	51.2
Visited health facility (in the last 6 months):				
• Yes	44.9	55.1	44.8	55.2
• No	54.2	45.8	50.2	49.8
women's participation any HH decision:				
• Ever participated	50.9	49.1	43.9	56.1
• Never participated	63.6	36.4	80.8	19.2
Children ever born:				
• 0-3	54.9	45.1	53.0	47.0
• 4-6	43.2	56.8	36.1	63.9
• 7-9	52.9	47.1	51.0	49.0
• 10 +	63.5	36.5	51.1	48.9
Living children:				
• 0-3	55.0	45.5	52.8	47.2
• 4-6	43.9	56.1	36.1	63.9
• 7-9	53.2	46.8	73.7	46.3
• 10 +	59.5	40.5	41.9	58.1
Sons at home:				
• 0-2	53.3	46.7	50.4	49.6
• 3-5	44.3	45.7	36.9	63.1
• 6+	53.0	47.0	55.4	44.6
Total (%)	51.5	48.5	48.4	51.6

hence reduced need for modern FP use. The highest FP use as well as decision was found in the age group (30- 34) of primary educated respondents, with statistical significance difference. Among secondary and highly educated respondents with increasing age, there was no consistent pattern of modern contraceptive use and/decision. Stratifying women by type of place of residence, it was found that urban residence was significantly associated with higher percentage of women participation in FP decision as well as use compared to those residing in rural areas. By analyzing the wealth quintiles, there was a steady increase in modern FP use and/her decision with the increase in the wealth index till richer level then it slightly decrease in the richest level. Partner's education opened more room for couple's discussion of FP where joint decision of FP was steadily and significantly increasing with the increase

in partner's educational level (from 80.2%- 89.6% in no education and higher education respectively). Women participation in any decision at home significantly influenced modern FP use where those who ever participated had higher percentage of use than those who never participated in decisions (49.1% vs 36.4% respectively), data not shown.

Demographic and fertility determinants of family planning (DHS 2008)

It was found that there was a positive relationship between women's educational level and modern contraceptive use which was steadily increasing with the increase in educational level from no education till secondary education then slightly decreased which can be explained by smaller sample size of women in higher education category. It was noticed that women whose partner's had higher education were more likely to use Folkloric/ traditional contraceptive

methods than women whose partner's had no education (3.8% & 2.3% respectively). It was found that working for cash was significantly associated with more use of modern contraceptive methods (shown in table (5)). Having recent contact with FP workers was positively associated with modern contraceptive use. However, being visited by FP worker was associated with higher percentage of modern contraceptive use compared to visiting the health facility (58.7% & 55.2% respectively), data not shown.

Table 6 shows the number of sons at home was significantly associated with husband's desire for children where the mean number of sons at home for husbands' who want more children was 1.42 ± 1.2 compared to 1.34 ± 1.1 for those who wanted either the same, less or do not know the number of desired children. In the logistic regression model 2008 (table 7), the significant predictors of modern FP use were respondent share in FP decision, participant age group, residence, and partner's education ($P < 0.05$). The overall prediction of the model was 86.5%.

Family planning decision (DHS 2008)

Respondent share in FP decision was the strongest predictor as FP use were more than 500 times among women who shared in FP decision compared to those who did not share. Regarding participant age, women in age groups (40-49) were 1.7 times more likely to use FP compared to women in age group (15-19), rural women were 1.3 times more likely to use FP compared to urban women, after controlling for all other variables, the overall percentage of the model was 95.8% ($P < 0.001$).

In table 9, among the highest educated women and with the increase in age it was found statistically significant FP use and decision. Stratifying women by type of place of residence, it was found that urban residence was significantly associated with higher percentage of

women participation in FP decision as well as modern contraceptive use compared to those residing rural areas. Stratifying couples by their wealth quintiles, there was a steady increase in modern contraceptive use and/her decision with the increase in the wealth index till richer level then it slightly decrease in the richest level. Among non-educated women and with increasing age, there is significant steady increase in both modern contraception use and her role in FP decision till the age of 40 where it started to decline. Stratifying women by type of place of residence, it was found that urban residence was significantly associated with higher percentage of women participation in FP decision as well as modern contraceptive use compared to those residing rural areas. Stratification of respondent's role in FP decision with wealth index, it was found that wealth index has a direct positive relationship with FP use as it gradually increases from poorest to richer. Partner's education opened more room for couple's discussion of FP where joint decision of FP was steadily and significantly increasing with the increase in partner's educational level (from 80.2%- 89.6% in no education and higher education respectively). Type of place of residence did not seem to have an effect on husband's decision making for contraceptive use however; urban residence was significantly associated with higher percentage of joint decision ($p = 0.001$), data not shown.

Sociodemographic and fertility characteristics (EDHS 2000 & 2008)

Table 10 shows women were aged (15-49) with a mean age of 33.4 and of 33.1 years whereas their partners' age ranged from 15-90 compared to 15-95 years with an average of 40.8 versus 40.4 years in 2000 versus 2008. The contraceptive prevalence was 48.5% & 51.6%. The highest percentages of use were found in the age groups between (30-44) years and peaks at the age of 35-39 in both

EDHS, where it reaches 60.3% in 2000 compared to 64.5% in 2008. Urban residence was associated with more use of modern contraceptive use however, with the passage of time there is more use of FP methods in both urban and rural areas. Regarding respondent's education, the analysis revealed that the increase in respondent's education associated with more use of modern FP. A similar phenomenon was noticed with partner's education, the difference was progressive increase in FP use reported with the increase in partner's educational level in 2000 but in 2008 the increase was noticed from no education to primary education then it became almost steady which means that the difference was between either having any degree of education versus having no education at all. Woman's working status was linked to more use of modern FP use in both data sets, however, in 2008, this effect was more.

Looking to the fertility determinants in the two data sets, we found that respondent contact with healthcare workers- especially being visited- was positively associated with more use of modern contraception particularly in 2008 which indicates improvement of outreach services. Regarding woman's participation in household decision, there was direct effect on modern FP use in both data sets with marked improvement in 2008. The number of children ever born was associated with more use of modern FP use where the peak of use was noticed with 4-6 children (56.8% in 2000 & 63.9% in 2008). This effect was more marked in the year of 2008).

The same finding was observed with the number of living children. In the year 2000, the number of sons at home was a weak determinant of modern contraceptive use while in 2008 it became stronger where the peak of modern FP use was with 3-5 sons at home (table 11).

Discussion

The overall CPR among the Egyptian married women at 2000-2008 was 50.6-54.3% which was higher than the overall CPR in Africa, 33%. But lower than the United Nation in 2015 worldwide, 64% of married or in-union women of reproductive age were using FP⁽²¹⁾. Our findings in bivariate analysis clearly identified that the FP use in Egypt had a significant relationship with a number of factors; respondent age group, education, place of residence, working status, and partner's education. In multiple logistic regression analysis, results suggest that current age, place of residence, husband education, respondent working status, are the main determinants for the use of FP. Equivalent findings were recently reported from a study conducted in Bangladesh using the secondary data obtained from their national survey.²²

Respondent age had a significant association with FP use. Older female was more than double times to use FP compared to younger female in 2000 and 2008. This practice can be explained that older females are more aware than adolescent female who may be relatively unexperienced about importance of FP. This result was contradictory to another study that found contraceptive use increases with age before 35-40 years, and then begins to decrease onwards.^{22,23}

Urban residence in the current study was significantly associated with higher percentage of women participation in FP decision as well as modern contraceptive use compared to those residing in rural areas in both DHS 2000 and 2008. This is usually accompanied with lower education level in the rural areas. Also the worldwide income in urban areas is mostly higher than income in the rural areas. Urban residents also have well access to different services, including FP.^{17,24} This finding was similar to a comparative study of contraceptive use among rural and urban women conducted in Nigeria and found the respondents from rural areas had a significantly less

FP use than their urban parts.²⁵ Respondent education was strongly associated with more FP use. This suggests that the efforts to improve access to education beyond the primary level need to be reinforced. Many researchers had found a positive relationship between female education and FP use.^{26-28,22,23}

In the current analysis not only respondent education inclined FP use but also partner's education was the strongest predictor for FP use, as it was 20 times more among women whose partner received higher educational levels compared to those with no education in EDHS 2000 and this difference was less in 2008. Equivalent positive effect of partner's education on use of FP was found in other researches (22, 29). While in the analysis of Uganda survey they found that partners' primary and secondary education increase cumulative fertility by about 0.13-0.2 compared to those with no education and explained this finding by; men with more education may have higher wages and this can lead to higher fertility.²³

Educational achievements of both women and their husbands were found to be very significant factors in the use of FP methods. Similar result was reported in different studies.^{28,30-33} Lack of formal education was strongly decreasing modern FP use as reported by Beekle and McCabe 2006.³⁰

This was not surprising as higher education attainment increases female decision making power and awareness of the benefits of good FP practices.³⁴

Household wealth index was significantly associated with more use of FP in EDHS 2008 and the use increases steadily with the increase in wealth status of the women. This may suggest considering affordability as an important factor to encourage increased the use of FP. This finding was in line to a study conducted in India and found that rich respondents are more likely to use FP

method.³⁵ Comparable findings were reported in the analysis of Ethiopia and Uganda national surveys.^{17,23} In spite of this, wealth index did not show significance as a predictor of FP use in multivariate analysis and this result was not consistent with a study in Afghanistan that verified respondents in high wealth index were more likely to use FP than respondents in low wealth index.³⁶ Contrary to this finding a report published from Bangladesh with no difference in FP use in different respondent wealth categories.²²

Women's work status was a significant determinant of FP use. Working women were more likely to use FP than the non-working women. This finding was consistent with other studies analyzing population based Surveys.^{17,37-42} There was a positive effect of the outreach FP program in this analysis as being visited by health worker at home increase the likelihood of using modern FP. Comparable finding was reported from the analysis of population survey in Ethiopia.¹⁷ Women in developing countries should be encouraged to put their own decision concerning the reproductive health services. The current study results showed that women who shared FP decision with their partners were more users of modern FP methods. Among non-educated women and with increasing age, there was steady increase in both FP use and her role in FP decision. This finding was in line with the findings from other researchers in different countries.^{28,43-45,37,38}

In the present study we found that husband desire for more children modified the FP use in Egypt and it was an important determinant of FP use in both DHS 2000 and 2008. When the husband needs more, the FP use decreases. When the husband needs fewer children the FP use increases, this explained by gender influence. Similar finding was identified in the analysis of 3 Ethiopia DHS surveys 2000, 2005 &

2011.⁴⁶ Women whose husbands wanted more children had lower odds of contraceptive use than women whose husbands wanted the same number of children as they did. This might be due to husbands' demands for more children having a negative influence on women's FP use, which in turn might affect decisions on the number of children desired.⁴⁷⁻⁴⁹ Moreover, other studies conducted in Nigeria and Sudan and showed that husband disagreement was the main reason behind non-use of modern FP.^{50,51}

Strengths and limitations

The strength of this study is analyzing two data sets of the EDHS. However, the study has limitations that should be admitted. There are certain important FP determinants that can predict modern FP use and not limited to; age at first marriage and age at first birth that were not analyzed here.

Conclusion and recommendations

The common significant predictors of modern FP use in both DHS 2000 & 2008 were participant age group, residence, husband education and desire for more children. FP decision was determined by; respondent's age, respondent's education, respondent's work, type of place of residence, partner's education in both data sets and wealth index only in 2008. Fertility determinants in the two data sets include; respondent contact with healthcare worker, the number of children ever born, living children and the number of sons at home was a weak determinant of modern contraceptive use and became stronger 2008. It is therefore recommended to stop early marriage, encourage education for both girls and boys, improve the frequency and quality of outreach services, and empower women with more opportunities for work.

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