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Women's Empowerment and Short and Long-acting Contraceptive Method Use in Egypt

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Abstract

Egypt is ranked one of the most gender unequal countries, and fertility is at a two-decade high of 3.5 births per woman. Women's empowerment is a strategy used to promote contraceptive use and lower fertility, yet evidence from the Middle East is limited. This study uses 2005, 2008, and 2014 Egyptian Demographic and Health Survey data to examine recent patterns of contraceptive method choice and how women's empowerment is associated with contraceptive method type: none, short-acting, or long-acting reversible contraceptive (LARC) methods. Using a nationally representative sample of 47,545 married women in their childbearing years, multinomial logistic regression models examine women's agency, specifically, household decision-making and attitudes towards intimate partner violence and contraceptive method type. In 2014, LARC use significantly declines and short-acting method use is higher than 2008. Women who make household decisions and are less accepting of intimate partner violence are more likely to use LARC (vs. no method). Women who make more joint decisions with spouses are more likely to use LARC (vs. no method) compared to those making individual decisions. Findings have implications for the family planning programs, and efforts involving men to increase household gender equality and lowering acceptance of intimate partner violence may promote LARC in Egypt.

Keywords

Contraceptive Use; Women's Empowerment; Gender-based Violence; Women's Health; Egypt

Introduction

In Egypt, in 2014, fertility reached a twenty-five year high of 3.5 births per woman. Egypt went through several political transitions between 2011 and 2014 with potential implications for the status of women and access to health care (Johansson-Nogues 2013). Low social and economic status of women and high fertility contribute to rapid population growth and increase health risks for women (Canning and Schultz 2012).

Family planning is a known determinant of fertility decline (Cleland et al. 2012), and long-acting reversible contraceptive methods such as intrauterine devices (IUDs) are associated with fewer unplanned pregnancies and declines in fertility rates compared to short-acting methods like oral contraceptive pills (Speidel, Harper and Shields 2008; Ricketts, Klingler

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and Schwalberg 2014). In Egypt, women have access to family planning as part of public primary health care (Rabie et al. 2013; Ali 2002), and women's use of long-acting reversible contraceptive methods increased steadily between 1984 and 2000 (Giusti and Vignoli 2006; Ali 2002). However, in the midst of rising fertility, the Ministry of Health and Population has observed a shift from IUDs to oral contraceptive pills in clinics (Abdel-Razik 2012). There remains a need to further understand factors that may contribute to this shift in method choice. Barriers to contraceptive use in Egypt include an absence of female physicians, a lack of physician training, son preference, region of residence, concerns about side effects, and husband's disapproval (Giusti and Vignoli 2006; Ali 2002; Abdel-Razik 2012).

Empowerment of women can be a means of overcoming these barriers to contraceptive use (Rahman, Mostofa and Hoque 2014; Bamiwuye, De Wet and Adedini 2013). In Egypt, it is assumed that women's empowerment plays an important role in women's choice of a specific contraceptive method (Abdel-Razik 2012). However, no study considers the relationship between women's empowerment and women's choices between short and long-acting reversible methods. This study uses data from the 2005, 2008, and 2014 Egyptian Demographic and Health Surveys to examine recent patterns of contraceptive method choice and how women's empowerment is associated with the choice of contraceptive methods.

Defining Empowerment

Women's empowerment is the process in which women acquire enabling resources, like education, which may enhance women's agency, or the ability to define life choices in an evolving historic and social context (Kabeer 1999). Agency includes the ability to formulate one's own strategic choices, to control resources, and to make attitudinal changes under evolving constraints (Yount et al. 2016). Agency is often operationalised with measures like household decision-making and freedom of movement (Heckert and Fabic 2013). Attitudinal measures of agency are also used in fertility research (Upadhyay et al. 2014; Olorunsaiye et al. 2017). This study measures agency as household decision-making, which has been validated in the Egyptian context (Yount et al. 2016) and tolerance of intimate partner violence, which is an established issue in Egypt (Yount and Li 2009).

Empowerment and Contraceptive Use

Research has considered the role of women's empowerment and use of contraceptives generally (Prata et al. 2017; James-Hawkins et al. 2016). Some work shows that empowered women are more likely to use contraception (Rahman, Mostofa and Hoque 2014; Hogan, Berhanu and Hailemariam 1999; Bamiwuye, De Wet and Adedini 2013), other studies have shown no association or negative associations (Haile and Enqueselassie 2006; Stephenson, Bartel and Rubardt 2012; Do and Kurimoto 2012).

For example, in Bangladesh, empowered women were more likely to have discussions with husbands about contraceptives and practice contraception (Rahman, Mostofa and Hoque 2014). Women who make household decisions more often are also likely to use contraceptives (Govindasamy and Malhotra 1996; Hogan, Berhanu and Hailemariam 1999; Al Sumri 2015). In Nigeria and Namibia, poor, less empowered women are the least likely to

use contraceptives (Bamiwuye, De Wet and Adedini 2013). In contrast, in Ethiopia, women's empowerment was not found to have a significant effect on couple's contraceptive use (Stephenson, Bartel and Rubardt 2012; Haile and Enqueselassie 2006). In several African countries, freedom of movement as a measure of agency is also not associated with contraceptive use (Do and Kurimoto 2012). The heterogeneity of findings suggests that the interplay between empowerment and modern contraceptive use is highly dependent on context.

The conflicting results may also be explained by variations in how empowerment is operationalised and measured (Prata et al. 2017; James-Hawkins et al. 2016). For example, greater agency as measured by freedom of movement can allow women to gain access to and obtain contraceptives (Govindasamy and Malhotra 1996). Women with less agency through less control in household decisions may be restricted in family-planning decision-making and negotiations with partners about contraceptive use. This highlights the importance of using several validated, context relevant measures of women's agency.

There is a need for use of additional family planning outcome measures beyond the binaries of current and ever use of any modern contraceptive method (Prata et al. 2017; James-Hawkins et al. 2016). Additional measures, like the choice between short and long-acting methods, may also provide further insight about the pathways between women's agency and contraceptive choices. On the one hand, women with less agency may not be able to access or negotiate for long-acting contraceptive methods with partners, relying instead on short-acting methods or no method at all. Women with greater agency may opt to use LARC methods because they can do so with or without their partner's knowledge and exert long-term control over their fertility (Robinson et al. 2016).

Conversely, women with more agency could choose to use short-acting methods because they can control starting and stopping the method more easily (Gomez and Clark 2014). Women who demonstrate agency through joint household decisions with spouses have negotiation skills with spouses (Malhotra and Mather 1997). These women in joint decision-making households could more easily choose short acting methods, like barrier methods, which require negotiation. Furthermore, women who perceive a greater ability to control their fertility may be more likely to want to exercise person control over their contraceptive method without the help of a physician. A qualitative study found that women expressed preference for oral contraceptive pills in Egypt because they did not require repeat clinic visits (Abdel-Razik 2012).

Women in Egypt

The Social Institutions and Gender Index, which measures legislation, practices, and attitudes that restrict women's rights, classified Egypt among the countries that are "very high" in gender discrimination in 2014 (Social Institutions & Gender Index 2014). Egypt is also consistently ranked among the worst countries for gender equality – 132 out of 144 countries worldwide in the Global Gender Gap in 2016 (World Economic Forum 2016). While Egypt has narrowed the gender gaps in political participation by women, and fully closed the gender gap in primary and secondary school enrolment (World Economic Forum 2016), women continue to have a traditional role in Egyptian society. Women's share of

estimated earned income is declining, and only 22% of women participate in the labour force (Khattab and Sakr 2009).

Violence against women in Egypt is also rooted in the subordinate position of women in society. In Egypt, anywhere between 28% and 62% of women report experiencing intimate partner violence, but most estimates are closer to 30% (Ambrosetti, Abu Amara, and Condon 2013). Women who experience spousal violence are less likely to use contraceptives and report more sexually transmitted infections and unintended pregnancies (OHara et al. 2013; Shah and Shah 2010; Hess et al. 2012).

Households are also organised along patriarchal lines as married men serve as heads of households and make decisions for the household. Women are typically married between 18 and 23 years old (Crandall et al. 2016). Marriage is nearly universal among pregnant women and out of wedlock births are reported to be rare. Women have first births soon after marriage and aversions to one-child families (Eltigani 2000). In 2005 in Minya, Egypt, women reported very little agency as less than 15% of women made household decisions (Yount et al. 2014). However, this attitude is changing as young adults say that women and men should share household decisions (Mensch et al. 2003). In Egypt, because of the collective nature of the household, relational autonomy or the extent to which women make decisions with others is a better measure of empowerment compared to individual decision-making (Kishor, Ayad and Way 1999). Little is known about the salience of joint household decision-making for women's reproductive decisions in Egypt.

Family Planning in Egypt

Historically, women who did not have access to contraception were primarily located in Upper Egypt (Giusti and Vignoli 2006). However, since 2005, family planning services are available as part of the public primary health care, and are nearly universal with 95% of the population living near primary health care centres (Abdel-Tawab et al. 2015). Until the 1980s, women primarily were using oral contraceptive pills, and then, in part due to funding from international development organisations, women's use of long-acting reversible contraceptive methods steadily increased between 1984 and 2000 (Ali 2002). Despite access to family planning, social barriers, like women's subordinate position in society, a lack of female physicians, and limited space to offer privacy continue to prevent access to contraceptives (Rabie et al. 2013; Abdel-Tawab et al. 2015). As such, women's agency may offer important insights about women's contraceptive choices in Egypt. The aims of this study are twofold: 1) to examine patterns of contraceptive choices over time in Egypt and 2) to use multiple indicators of women's agency that capture both individual and relational agency to look at the association between agency and contraceptive choices (short-acting methods and LARC) in Egypt.

Methods

Data

Data come from the latest three rounds of Demographic and Health Surveys conducted in Egypt (EDHS) – 2005, 2008, and 2014. The Demographic Health Surveys (DHS) are

nationally representative standardised household-based surveys collected by ICF International in collaboration with the Egyptian government. The EDHS use a multistage stratified probability-based sample drawn from the census frame using a three-stage cluster design in rural and urban areas. The woman's form was administered to all ever-married women 15 to 49 years old and gathered data on demographics, reproductive history, health knowledge and female genital cutting. The response rate in Egypt is 99.7% (El-Zanaty and Way 2009).

This study uses two analytic samples – a primary sample and a sub-sample. The primary sample includes 47,545 married women in their childbearing years (15 to 49 years) with complete information on agency and contraceptive use in the 2005, 2008, and 2014 EDHS. This primary analytic sample (N=47,545) includes 15,947 women from 2005, 13,648 women from 2008, and 17,950 women from 2014. Women who had been sterilised or whose husbands had been sterilised (7%) were excluded as the study is focused on women in their childbearing years who may become pregnant. The analytic sub-sample excludes 4,514 women who make no household decisions, and includes 43,031 women who make at least one household decision to look at differences in contraceptive method choice among decision-makers.

Measures

Dependent Variable—In this study, the dependent variable, *contraceptive method* is based on a question where women were asked if they were currently doing something or using something to delay or avoid becoming pregnant. Long-acting reversible contraceptive (LARC) methods are those that last longer than 3 months, which includes the IUD and implant, but excludes the injectable. Women who cited no method, abstinence, withdrawal, or lactational amenorrhoea are coded as '0 = No Method', those using modern short-acting methods such as the pill, injections, condoms, or diaphragm/foam/jelly are coded as '1=Short-acting Method', and those using IUDs or implants are coded as '2 = Long-acting Reversible Method'.

Independent Variables—Women's agency was measured on the individual level and across two dimensions: *household decision-making* and *attitudes towards intimate partner violence*. Respondents were asked to state who in the family had the final say on the following decisions: (a) making large household purchases, (b) visits to family, friends or relatives, (c) getting medical treatment or advice for yourself, and (d) what to do with husband's money. The reliability coefficient ($\alpha = .74$) implies a reasonable correlation among items. Response categories include the respondent alone, husband, respondent and husband jointly, somebody else, or others. Since these response categories do not create an interval, a household decision-making count variable includes the number of times the respondent herself makes decisions and the number of times the respondent and husband make household decisions. The count of household decision-making captures all possible ways the respondent has a say in household decisions and ranges from 0 to 4 with a higher count indicating making more household decisions.

A second decision-making variable, joint household decision-making, excludes women who made no household decisions. Joint household decision-making is a count of the number of times the respondent and husband make household decisions together out of all possible decisions. This variable also ranges from 0 to 4 with a higher count indicating a greater number of joint household decisions and a lower count indicating a greater number of decisions that the woman makes on her own. This measure is included for the analysis of the sub sample of women who make household decisions to test whether there are differences for those making joint vs. individual decisions.

Attitudes towards intimate partner violence is a 5-item scale assessing a level of acceptance of domestic violence. An important indicator of women's control in a society is the level of acceptance of intimate partner violence (Hindin, Kishor, and Ansara 2008). Respondents were asked if a husband is justified in beating his wife if (a) she burns the food, (b) she neglects the children, (c) she argues with him, (d) she refuses him sex, or (e) she goes out without telling him. Yes or no responses were summed to create a scale that ranges from 0 to 5 with higher responses indicating a greater acceptance of intimate partner violence ($\alpha = .86$).

Control Variables—Individual control variables include age, education, age at marriage, religious affiliation, number of births, having a son, and having ever worked for pay. Age at marriage is dichotomised to indicate marriage before age of 18 or at 18 years or older. Education is defined as the last grade completed. Responses were recoded as '0=No education', '1=Primary', '2=Preparatory', '3=Some Secondary', '4=Secondary', '5=Intermediate or higher'. Having ever worked is a binary variable indicating '1=woman has worked for pay' or '0=woman has not ever worked for pay'. Religion is coded as '1=Christian' and '0=Muslim'. Number of births is the total number of births reported and having is son is '1=has a son' and '0=does not have a son'.

Household control variables include whether the woman was born in an urban area, region of residence, household wealth, and household size. Region is a set of six dummy variables indicating whether the respondent lived in Urban Governorates, Urban Lower Egypt, Urban Upper Egypt, Rural Lower Egypt, Rural Upper Egypt, or Frontier Governorates. The household wealth index is estimated from asset variables and coded by DHS: quintiles are from 1 (poorest) to 5 (wealthiest) households. Household size is a continuous measure based on the number of inhabitants in a household. The women's spouses' characteristics include age (in years) and education. Spouses education was coded in the same manner as the respondents' education: '0=No education', '1=Primary', '2=Preparatory', '3=Some Secondary', '4=Secondary', '5=Intermediate or higher'.

Analysis

Descriptive statistics were calculated for all variables. Bivariate associations were examined for each variable by year – 2005, 2008, and 2014, including differences in contraceptive method by year. Bivariate multinomial regression models examined relationships between contraceptive method and continuous measures of agency – household decision-making and attitudes towards intimate partner violence. The multivariate analyses included two

multivariate multinomial regression models. The first model used the full sample to examine relationships between agency and contraceptive use while controlling for the year of the survey, individual, household, and spousal characteristics. The second model used the subsample of women who make household decisions to examine relationships between joint vs. individual household decision-making and contraceptive use while controlling for the year of the survey, individual, household, and spousal characteristics. Results for preliminary models stratified by year were consistent with findings presented. Interactions between year and agency were tested, not significant, and for parsimony, are not included. All models were estimated in STATA 14 and weighted to account for the DHS sampling design.

Results

Descriptive

Table 1 shows the individual, household, and spousal descriptive characteristics for women ages 15 to 49 in 2005, 2008, and 2014. For all three years, women were on average 33 years old. A majority of the women were Muslim (94 – 96%). Compared to 2005 and 2008, women in 2014 were married at slightly older ages, more likely to have completed secondary or higher education, were more often unemployed, had fewer births, were from rural areas, had smaller households, and had a higher likelihood of having a husband who had completed a secondary or higher education.

With respect to women's agency, there were significant differences in decision-making and attitudes towards intimate partner violence by year of the DHS ($p<0.001$). Over time from 2005 to 2014, women made more household decisions and were less inclined to believe that intimate partner violence is justified ($p<0.001$). In 2005, respondents made very few of any type of household decision with the average score equivalent to making two decisions (Mean=2.04, SD=0.03). However, when decision-making is broken down by whether the woman is making decisions on her own (individual decision-making) or with a spouse (joint decision-making), respondents made more joint decisions (Mean=1.58, SD=0.03) as compared to individual household decisions (Mean=0.46, SD=0.02). In all three years, respondents made less than one decision on their own. In 2014, respondents reported significant more joint household decisions (Mean=2.58, SD=0.03) compared to 2008 (Mean=2.45, SD=0.02) and 2005 (Mean=1.58, SD=0.03). There is a decline in the belief that a husband is justified in beating his wife over time as women justified intimate partner violence less in 2014 (Mean=0.89, SD=0.03) as compared to 2008 (Mean=1.21, SD=0.02) and 2005 (Mean=1.83, SD=0.04). In other words, in 2005, women believed that intimate partner violence was justified for between one and two reasons while in 2014, women only identified between zero and one instance ($p<0.001$).

The proportion of women using contraception was similar across all three years (Table 2). In 2014, 65% of married women reported using a contraceptive method compared to 67% in 2008 and 65% in 2005. However, contraceptive method type differed by year ($p<0.001$).

The IUD was the most common contraceptive method, but IUD use is significantly lower in 2014 as compared to 2008 and 2005, with 42% of women having used an IUD in 2005, 41%

in 2008, and 33% in 2014. The use of short-acting methods was significantly higher in 2014, as it is 32% in 2014 compared to only 26% in 2008 and 23% in 2005.

Decision-making, IPV attitudes, and Contraceptive Method Choice

Table 3 shows the bivariate (Model 1) and multivariate (Model 2) multinomial logistic regression results for the pooled full sample (N=47,545). Model 1 shows that women who made more household decisions had a higher risk of using LARC methods (RRR: 1.12) compared to no method and LARC methods (RRR: 1.04) compared to short-acting methods ($p<0.001$). Model 1 also shows that women who believed intimate partner violence is justified were less likely to use short-acting methods (RRR: 0.98) compared to no method, LARC methods (RRR: 0.91) compared to no method, and LARC methods (RRR: 0.93) compared to short-acting methods ($p<0.001$).

Model 2 shows the multivariate multinomial logistic regression models that account for individual, household, and spousal controls. For each additional household decision women made, there was a 4% higher risk of using short-acting methods compared to no method and 5% higher risk of using LARC methods compared to no method ($p<0.001$), all else constant. For each additional reason a woman accepted intimate partner violence, she was less likely to use a contraceptive method ($p<0.001$), all else constant. There are no significant differences in women's agency for short-acting method vs. LARC methods.

There are important differences by year. In 2005 as compared to 2008, women had higher risk of using no method compared to short-acting methods (RRR: 0.82). However, in 2014 as compared to 2008, women had higher risk of using short-acting methods (RRR: 1.14) compared to no method ($p<0.001$). Women were also significantly less likely to use LARC methods (RRR: 0.79) compared to no method and LARC methods (RRR: 0.69) compared to short-acting methods in 2014 (vs. 2008) ($p<0.001$). Significant covariates include age, age at marriage, having ever worked, being Christian, number of births, having a son, living in either rural Lower or Upper Egypt, and husband's age.

Table 4 shows the multivariate models of modern contraceptive method use for the subsample of women who make at least one household decision (N=43,031). Women who make no household decisions are excluded. Of the women who make decisions, for each additional joint decision a woman made, she had 12% higher risk of using short-acting methods compared to no method and 11% higher risk of using LARC methods compared to no method ($p<0.001$). There are no significant differences in joint vs. individual decision-making for short-acting method vs. LARC methods. Similar to the full sample, among the decision-making women, for each additional reason a woman accepted intimate partner violence, she was less likely to use a contraceptive method ($p<0.001$). The same differences by year are also observed for the sub-sample of women who make decisions.

Discussion

Drawing on three cross sections of data from 2005 to 2014 in Egypt, this study looks at contraceptive method use and uses multiple dimensions of women's agency to see how empowerment is associated with modern contraceptive method choice. This study shows that

there has been a shift from LARC methods to short-acting methods after 2008 in Egypt. Building on work that links decision-making to contraceptive use in Egypt (Al Sumri 2015; Govindasamy and Malhotra 1996), this study shows that women's agency is a reliable and key determinant of short-acting and LARC methods over three separate time periods. Furthermore, this study shows that specific expressions of women's agency in relation to men – namely joint household decision-making and acceptance of intimate partner violence are of particular importance for LARC in Egypt.

Contraceptive use has remained consistent in Egypt – about 65% of women report using a method in 2005, 2008, and 2014. However, there is a significant shift from LARC methods to short-acting methods, primarily from IUDs to oral contraceptive pills in 2014. This may be due to Egypt's elimination of financial incentives for providers that favoured insertion of IUDs over other methods in 2011 and the discontinuation of IUD insertion training programmes for physicians (Rabie et al. 2013; Abdel-Razik 2012). However, the transition from the most effective to less effective contraceptives may contribute to the rise in fertility (Wickstrom and Jacobstein 2011). Unintended pregnancies are closely related to contraceptive method choice (Speidel, Harper and Shields 2008). Short-acting methods like oral contraceptives have a higher failure rate compared to LARC methods, and LARC methods are associated with declines in number of births (Ricketts, Klingler and Schwalberg 2014). As Egypt moves towards addressing rising fertility, efforts need to be made to address the shift to high failure short-acting methods.

One strategy that can be used to promote contraceptive method choice in Egypt is empowerment of women. Women's agency is associated with LARC methods vs. no method, but not associated with LARC vs. short-acting methods. This aligns with qualitative work in Egypt that finds that while the incentive system for service providers is a contributing factor to the decline in IUDs, women's desire for independent use of a method without the help of a provider may also be a contributing factor (Abdel-Razik 2012). Women with greater agency are opting to use both short-acting and LARC methods. Results also show that the relationship between women's agency and contraceptive methods is reliable as the relationship remains consistent over three separate years in Egypt. The relationship persists when controlling for other known individual, household, and spousal determinants of contraceptive use.

The results also indicate that interventions that promote women's agency in Egypt need to account for women's roles within the family. Compared to those who make joint household decisions with husbands, women who make individual decisions are less likely to use both short and long-acting contraceptive methods. These results show that it is important to consider how women exercise their agency in the presence of men. Perhaps, women who make joint decisions are better able to negotiate the circumstances around sexual activity, contraceptive use, and fertility. Joint decision-making could be an indicator of better communication between spouses. Women who make joint household decisions could also be participating in and making joint family planning decisions. This aligns with work in Bangladesh that found women with more household autonomy could negotiate contraceptive use (Rahman, Mostofa, and Hoque 2014).

Women who demonstrate less agency through higher acceptance of intimate partner violence are also associated with not using any contraceptive methods. Acceptance of intimate partner violence is associated with the occurrence of intimate partner violence (Abramsky et al. 2011). Acceptance of intimate partner violence is also an indication of diminished negotiation skills. Women who accept intimate partner violence may also fear violence and avoid discussions of family planning and contraceptive use as potential catalysts for violence. Those who are accepting of intimate partner violence are also demonstrating acceptance of gender norms for women that vary from those of men. This divergence from gender equality has a negative relationship with contraceptive use (Mishra et al. 2014). Contraceptive use patterns have been found to differ by abuse status with abused women using barrier methods and women who are not abused using hormonal methods (Williams, Larsen and McCloskey 2008). Since Egyptian women primarily use hormonal methods, it is likely that women who experience violence are not using contraceptive methods at all. Further research on experiences of violence in Egypt can provide insights into this pathway.

Household decision-making and attitudes towards intimate partner violence are also a direct measure of gender relations within families. There is a legacy of patriarchy and male dominance in Egypt, and while there have been programmatic efforts to empower women and gradual shifts towards gender equity, society still upholds traditional views about the roles of men and women (Yount and Rashad 2008). These findings indicate women's empowerment needs to be promoted through pathways of gender equity within the context of the family and community. Joint household decision-making is evidence of related changes in men's behaviour vis-à-vis women. Women's joint decision-making may also advance rules governing women's behaviour within the family and normative changes in gender relations (Koenig et al. 2003). Gender equity within the household also has a positive relationship with contraceptive use (Mishra et al. 2014). Similar to work that finds that involving spouses to encourage joint decision-making can improve pregnancy health, interventions to promote women's agency for contraceptive use should target couples and involve men (Mullany, Hindin and Becker 2005; Ali 2002). Programmatic efforts need to encourage women's agency through promotion of interpersonal household control that involves communication and negotiation with spouses as well as gender programming that helps men accept family planning (Withers et al. 2015). Concurrently, family planning programmes need to address the need for LARC training for physicians and LARC service provision so that couples will have access to the full range of contraceptive method options (Wickstrom and Jacobstein 2011; Abdel-Razik 2012).

Several limitations of the study must be noted. Women's agency is multidimensional, and the only available measures are decision-making and acceptance of violence. Freedom of movement and economic freedom are also potentially important measures of women's agency in Egypt. Additional empowerment and household decision-making measures about family planning would help provide insights into the pathways between joint decision-making and contraceptive choices (Heckert and Fabic 2013). The cross-sectional nature of the Egyptian DHS data limits the conclusions that can be drawn from this analysis as it is not possible to assess the chronology of the relationship between women's agency and contraceptive method use.

Despite these limitations, there are many strengths to the study. The DHS samples are large, nationally representative, and the response rate is high. These are the highest quality data on agency and contraceptive use from a Middle Eastern setting when little research has investigated women's empowerment and reproductive behaviour in contexts outside of south Asia and sub-Saharan Africa (Upadhyay et al. 2014; Prata et al. 2017). Furthermore, this study uses three waves of DHS data from 2005 and 2014 to both observe patterns and to see if the relationship between women's agency and contraceptive use is reliable in Egypt.

These findings contribute to an understanding of contraceptive patterns in Egypt, and how multiple relational dimensions of women's agency are associated with short-acting and LARC methods. Importantly, this study shows a shift from long-acting to short-acting contraceptive methods in recent years in Egypt. Women's agency is associated with both short-acting and long-acting reversible contraceptive methods in a Middle Eastern context that has undergone several political transitions with implications for the status of women. Women's agency is a process occurring in women's daily lives, but also a process occurring over time in the family and society. Understanding women's experiences of agency and its effects on contraceptive choices contributes to the advances being made towards gender equity in Egypt.

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Table 1.

Sample Descriptive Characteristics (Means (SE) or %) of Married Women 15–49 in the Egyptian Demographic and Health Surveys (N=47,545)

Key Variables	2005 N=15,947 % or Mean (SE)	2008 N=13,648 % or Mean (SE)	2014 N=17,950 % or Mean (SE)
Household Decision-Making***	2.04 (0.03)	2.88 (0.02)	2.99 (0.03)
Individual Decisions	0.46 (0.02)	0.42 (0.01)	0.41 (0.01)
Joint Decisions	1.58 (0.03)	2.45 (0.02)	2.58 (0.03)
Attitudes Towards Intimate Partner Violence***	1.83 (0.04)	1.21 (0.02)	0.89 (0.03)
Current Age in years	33.4 (0.10)	33.4 (0.09)	33.3 (0.09)
Age at First Marriage***			
Less than 18 years	33.9	31.6	27.1
18 years or older	66.1	68.4	72.9
Mean (SE)	19.5 (0.07)	19.7 (0.06)	20.0 (0.06)
Education***			
None	34.3	31.6	24.1
Primary	11.5	8.36	5.97
Preparatory	4.38	3.86	4.14
Some Secondary	9.48	10.8	12.8
Secondary	29.8	33.7	39.2
Intermediate or Higher	10.5	11.6	13.8
Currently Employed***	21.8	16.3	15.6
Religion***			
Muslim	94.3	95.0	96.1
Christian	5.59	5.01	3.79
Births***	3.22 (0.03)	3.01 (0.02)	2.86 (0.02)
Has a Son	78.8	78.1	79.5
Region***			
Urban Governorates	17.2	17.8	12.9
Urban Lower	11.5	12.0	10.8
Urban Upper	31.9	34.4	39.0
Rural Lower	12.3	10.9	11.0
Rural Upper	25.9	23.5	25.5
Frontier Governorates	1.11	1.37	0.88
Household Wealth Index***			
Poorest	17.9	20.9	17.8
Poorer	19.2	20.2	19.3
Middle	20.2	20.2	22.5
Richer	21.2	19.4	20.7
Richest	21.5	19.2	19.7

	2005 N=15,947	2008 N=13,648	2014 N=17,950
Key Variables	% or Mean (SE)	% or Mean (SE)	% or Mean (SE)
Household Size ***	6.34 (0.10)	6.02 (3.89)	5.06 (0.05)
Husband's Age in years ***	40.4 (0.12)	41.2 (11.1)	39.8 (0.11)
Husband's Education ***			
None	22.3	23.4	16.6
Primary	13.6	11.6	8.9
Preparatory	6.49	5.54	5.83
Some Secondary	11.0	10.5	12.1
Secondary	30.9	34.4	40.4
Intermediate or Higher	15.7	14.5	16.3

Notes:

*
p<0.05,

**
p<0.01,

p<0.001.

Significance for differences by year.

Table 2.

Distribution of Contraceptive Use for Married Women 15–49 years old, 2005, 2008, and 2014 Egyptian Demographic Health Survey

	2005 N=15,947		2008 N=13,648		2014 N=17,950	
	N	%	N	%	N	%
Contraceptive Type***						
No Method	5591	34.9	4556	33.4	6307	35.0
Pill	1789	11.1	1825	13.4	3273	18.2
IUD	6588	41.0	5546	40.6	6145	34.1
Injections	1274	7.93	1134	8.31	1440	7.99
Condoms	179	1.11	110	0.81	96	0.53
Abstinence	132	0.82	69	0.51	66	0.37
Withdrawal	53	0.33	36	0.26	56	0.31
Implant	150	0.93	70	0.51	111	0.62
Diaphragm/Foam/Jelly	7	0.04	2	0.01	17	0.09
Breastfeeding	293	1.83	303	2.22	213	1.18
Contraceptive Method***						
No Method	5591	34.9	4556	33.4	6307	35.0
Short-acting Method	3618	22.7	3476	25.5	5747	32.0
LARC	6738	42.2	5616	41.1	5898	32.9

Notes:

*
p<0.05,

**
p<0.01,

p<0.001.

Significance for differences by year

Table 3.

Bivariate and Multivariate Multinomial Regression Models Predicting Contraceptive Method for Married Women aged 15–49, 2005, 2008, and 2014 Egyptian Demographic Health Surveys (N=47,545)

Key Variables	Short Acting Method vs. No Method		LARC vs. No Method		LARC vs. Short Acting Method		Short Acting Method vs. No Method		LARC vs. No Method		LARC vs. Short Acting Method		
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2		
RRR (SE)													
Household Decision-Making Attitudes towards Intimate Partner Violence	1.08***	(0.012)	1.12***	(0.013)	1.04***	(0.012)	1.04**	(0.013)	1.05***	(0.013)	1.01	(0.013)	
	0.98*	(0.009)	0.91***	(0.009)	0.93***	(0.008)	0.97**	(0.010)	0.96***	(0.009)	0.99	(0.009)	
	-	-	-	-	-	-	0.82***	(0.037)	1.01	(0.047)	1.23***	(0.054)	
	-	-	-	-	-	-	1.14**	(0.050)	0.79***	(0.037)	0.69***	(0.029)	
	-	-	-	-	-	-	0.94***	(0.004)	0.97***	(0.003)	1.03***	(0.004)	
	Education (Ref=Primary)												
	None	-	-	-	-	-	0.89	(0.066)	0.84*	(0.061)	0.94	(0.073)	
	Preparatory	-	-	-	-	-	-	0.86	(0.073)	0.89	(0.068)	1.03	(0.087)
	Some Secondary	-	-	-	-	-	-	0.91	(0.075)	0.96	(0.075)	1.06	(0.087)
	Secondary	-	-	-	-	-	-	0.94	(0.072)	1.02	(0.076)	1.09	(0.086)
Intermediate or Higher	-	-	-	-	-	-	0.77**	(0.075)	0.94	(0.086)	1.22*	(0.114)	
Older than 18 at First Marriage	-	-	-	-	-	-	1.38***	(0.053)	1.16***	(0.041)	0.85***	(0.031)	
Ever Worked	-	-	-	-	-	-	1.20***	(0.053)	1.19***	(0.044)	0.99	(0.040)	
Christian	-	-	-	-	-	-	1.20**	(0.083)	1.32***	(0.083)	1.10	(0.072)	
Births	-	-	-	-	-	-	1.46***	(0.020)	1.28***	(0.016)	0.88***	(0.010)	
Sons	-	-	-	-	-	-	2.90***	(0.116)	3.15***	(0.119)	1.08	(0.046)	
Region (Ref=Urban Governorates)													
Urban Lower	-	-	-	-	-	-	1.03	(0.067)	0.89*	(0.052)	0.86*	(0.054)	
Urban Upper	-	-	-	-	-	-	1.32	(0.213)	1.14	(0.285)	0.87	(0.172)	
Rural Lower	-	-	-	-	-	-	0.90	(0.056)	0.66***	(0.038)	0.73***	(0.046)	

Key Variables	Short Acting Method vs. No Method		LARC vs. No Method		LARC vs. Short Acting Method		Short Acting Method vs. No Method		LARC vs. No Method		LARC vs. Short Acting Method	
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	RRR (SE)		RRR (SE)		RRR (SE)		RRR (SE)		RRR (SE)		RRR (SE)	
Rural Upper	-	-	-	-	-	-	0.69*	(0.112)	0.31***	(0.079)	0.46***	(0.091)
Frontier Governorates	-	-	-	-	-	-	0.89	(0.084)	0.46***	(0.048)	0.52***	(0.050)
Household Wealth Index (Ref=Poorest)												
Poorer	-	-	-	-	-	-	0.95	(0.047)	1.08	(0.054)	1.15**	(0.057)
Middle	-	-	-	-	-	-	0.99	(0.054)	1.15*	(0.063)	1.16**	(0.062)
Richer	-	-	-	-	-	-	0.93	(0.056)	1.23***	(0.074)	1.32***	(0.077)
Richest	-	-	-	-	-	-	0.86*	(0.061)	1.25**	(0.087)	1.46***	(0.100)
Household Size	-	-	-	-	-	-	0.99	(0.007)	1.00	(0.006)	1.01*	(0.006)
Husband's Age (years)	-	-	-	-	-	-	0.98***	(0.003)	0.99***	(0.003)	1.01***	(0.003)
Husband's Education (Ref=Primary)												
None	-	-	-	-	-	-	0.85*	(0.059)	0.82**	(0.051)	0.96	(0.063)
Preparatory	-	-	-	-	-	-	1.07	(0.077)	1.02	(0.068)	0.96	(0.068)
Some Secondary	-	-	-	-	-	-	0.98	(0.071)	0.97	(0.064)	0.99	(0.069)
Secondary	-	-	-	-	-	-	1.00	(0.067)	1.00	(0.061)	1.01	(0.064)
Intermediate or Higher	-	-	-	-	-	-	1.00	(0.084)	1.09	(0.081)	1.09	(0.083)

Notes:

* p<0.05,

** p<0.01,

*** p<0.001.

Standard errors in parentheses

Table 4.

Multivariate Multinomial Regression Models Predicting Contraceptive Method for Decision-Making Women aged 15–49, 2005, 2008, and 2014 Egyptian Demographic Health Surveys (N=43,031)

Key Variables	Short Acting Method vs. No Method		LARC vs. No Method		LARC vs. Short Acting Method	
	RRR (SE)					
Joint Household Decision-Making	1.12 ***	(0.015)	1.11 ***	(0.014)	0.99	(0.012)
Attitudes towards Intimate Partner Violence	0.98 *	(0.010)	0.97 ***	(0.010)	0.99	(0.009)
Year (Ref=2008)						
2005	0.88 **	(0.041)	1.08	(0.051)	1.22 ***	(0.055)
2014	1.17 ***	(0.052)	0.81 ***	(0.037)	0.69 ***	(0.030)

Notes:

* p<0.05,

** p<0.01,

*** p<0.001.

Standard errors in parentheses. Model controls for age, education, age at marriage, religious affiliation, employment, sons, parity, region, household wealth, spouse's age, and spouse's education.