ORIGINAL RESEARCH ARTICLE

A National Study: the Effect of Egyptian Married Women's Decision-Making Autonomy on the use of Modern Family Planning Methods

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Abstract

Contraceptive use is vital in protecting the health of women and the survival of their children. This study aims to test whether women's autonomy influences their use of modern contraception methods and to determine the mediating effect of education and employment. A cross sectional study using Egypt's 2008 demographic and health survey was carried out including a sample of 13,734 married women aged 15-49 years. Women's decision-making autonomy score was obtained from 5 questions on who has the final say on various household decisions. Household decision-making autonomy was significantly associated with current modern contraceptive use. Women with intermediate and high autonomy were 1.19 (95%CI 1.04-1.35) and 1.32 (95% CI 1.18-1.49) more likely to use modern contraception methods compared to women with low autonomy. Women's education and employment did not mediate this relation. This study supports the evidence of the positive role of women's autonomy on their uptake of contraceptive methods and this is an independent role and not explained by their educational or employment status. *(Afr J Reprod Health 2015; 19[4]: 68-77).*

Keywords: Egypt, women, autonomy, contraceptive use

Résumé

L'utilisation des contraceptifs est crucial dans la protection de la santé des femmes et la survie de leurs enfants. Cette étude vise à vérifier si l'autonomie des femmes influe sur leur utilisation de méthodes modernes de contraception et l'effet médiateur de l'éducation et de l'emploi. Une étude transversale utilisant l'enquête démographique et sanitaire de 2008 de l'Egypte a été effectuée, y compris un échantillon de 13,734 femmes mariées âgées de 15-49 ans. Le score de l'autonomie de la prise de décision chez les femmes a été obtenu à partir de 5 questions qui cherchent à savoir celui qui a le dernier mot sur les différentes décisions du ménage. L'autonomie de décision des ménages était significativement associée à l'utilisation actuelle de la contraception moderne. Les femmes avec une autonomie moyenne et elevee étaient de 1,19 (IC à 95% 1,04 à 1,35) et de 1,32 (IC à 95% 1,18 à 1,49) plus susceptibles d'utiliser des méthodes modernes de contraception par rapport aux femmes qui avaient une faible autonomie. L'éducation et l'emploi des femmes ne médiatisent pas cette relation. Cette étude confirme la preuve du rôle positif de l'autonomie des femmes sur leur adoption des méthodes contraceptives et cela est un rôle indépendant et non expliqué par leur niveau d'éducation ou d'emploi *(Afr J Reprod Health 2015; 19[4]: 68-77).*

Mots-clés: Egypte, femmes, autonomie, utilisation des contraceptifs

Introduction

There is still a wide gap in maternal mortality between the rich and poor regions of the world. In 2005 the maternal mortality ratio was 450 deaths per 100,000 live births in the developing countries compared to 9 deaths per 100,000 in the developed countries[1]. The higher fertility rates in the developing world compared to it in the developed world is one of the main risks of maternal mortality in those countries[2]. The high fertility rates in the developing world is largely explained by the high rates of unintended pregnancies[2]. Many which mainly result from lack of use of an effective contraceptive method. Women with unintended pregnancies are less likely to seek antenatal and prenatal health care than women with intended pregnancies[3,4,5], which contributes largely to the increased risk of maternal deaths and disability adjusted life years(DALYs)[6]. A study in Ecuador found women with unintended pregnancies were 32% less likely to seek prenatal medical care and they were also 25% less likely to initiate follow up during their first trimester.

Moreover they were 29% less likely to have the minimal number of medical visits compared to women with planned pregnancies[4].

On the other hand many studies worldwide showed infant mortality being related to short birth interval and high birth order[7,8,9,10,11,12]. Many of the maternal and infant mortalities can be reduced or prevented through the use of safe contraceptive methods[13].

Autonomy: Definition and Measurements

Empowerment is defined as a "process where women can increase their self-reliance and have the independent right to make choices and control resources"[14].

Despite all the strategies that emphasize gender equality, equity and empowerment of women , many women mainly in the developing world are more likely compared to men to be poor, illiterate and have less access to medical care services, employment and property ownership[14].

More autonomous women are seen to have more power regarding their reproductive choices and use of contraception[15], a fact that will enable demographers to act upon increasing contraception uptake through increasing women's autonomy.

Since late 1990s the demographic health survey (DHS) program started to include women's empowerment measure in their questionnaire through standard questions, which has been used widely by different countries. These measures include decision making index, freedom of movement index and set of questions on gender role attitudes such as reasons that justify husband's beating for his wife and the reasons that justify wife's refusal to have sex[16]. All of which assess the extent of women's acceptance of being controlled by men. However over the years Egypt's DHS modified these measures by removing the freedom of movement index from their questionnaire and adding different dimensions (through different questions) to the decision making index.

The Indices have been used extensively and resulted in valuable studies in the literature on women's autonomy and its impact on different health outcomes for both mothers and their children.

There is a tendency for researchers to use either decision making autonomy index, freedom of movement autonomy index or both indices in questionnaires as a tool to measure women's autonomy in relation to reproductive health[17,18,19]. Egypt is considered as one of the densely populated countries in the African continent, in the Middle East and in the Arab world. Despite the government's efforts in providing family planning services. The use of contraception (modern and traditional) by married women has doubled in Egypt between 1980 to 2003 from 24% to 60%[20], however this level remained steady till 2006. Moreover Egypt still faces challenges regarding maternal and infant mortalities. Therefore more attention should be given to other social determinants of contraceptive use such as women's autonomy.

Majority of the studies that looked at the association between autonomy and reproductive health were carried out in the Asian continent followed by fewer studies in Africa. Many of the studies conducted in Asia[21,22,23]and Africa[24,25] showed positive association between women's autonomy and use of contraception, however there are few with conflicting results[26,27] and many failed to control for important confounders such as education and employment that may mediate such association.

This study aims to analyze the association of Egyptian women's decision-making autonomy and use of modern contraception. Moreover the question of whether women's education and employment, which in other studies were positively associated with their autonomy, act as mediators in this association

Methods

Survey

A quantitative cross sectional secondary analysis using Egypt's DHS 2008 dataset was carried out. The Egypt Demographic Health Surveys (DHS) are national population and health surveys of

which the 2008 survey is the latest. The 2008 survey was conducted in the period between March-May2008 covering the governorates of Egypt. A multi-stage sampling method was followed. The first stage included selection of towns from urban areas and villages from rural areas. The second stage involved obtaining detailed maps of the selected towns and villages and dividing them into segments. Finally using the household listing for each segment, a systematic random sample of households was chosen for the EDHS 2008. A number of 18,968 eligible households were successfully interviewed with 99.1% response rate[28].

Participants

All ever-married Egyptian women aged 15-49 years old who were residents in the household or were present in the household the day before the interview were eligible to be questioned in the survey. A total of 16,571 eligible women were identified from which 16,527 were successfully interviewed with a response rate of 99.7%[28]. However this study has only included women who were currently married, resulting in a total of 13,734 participants.

Measurements

Questionnaires were used and carried out by trained interviewees to obtain data on the following: women's background characteristics, reproduction, contraceptive knowledge and use, attitudes in family planning (including decision making autonomy index), pregnancy and breastfeeding and husband's background characteristics.

Women's autonomy was obtained using the decision-making index. This comprised of five questions on who has the final say on making decisions relating to 1) the women's own health care 2) large household purchases 3) daily household purchases 4) visits to friends or relatives 5) what to do with the money that husband earn. Responses were scored as: 1 point for decisions taken by respondent alone or jointly with husband and 0 point for decisions made by husband alone or others. A score on a scale out of 5 has been obtained for each participant by summing across the five questions.

Nine different score categories were produced ranging from 0-5, which then for ease of analysis were divided equally to produce three autonomy categories: low (<2), intermediate (2-3) and high (>3).

The outcome was categorized into a binary variable; use of 1) a modern method if participant were a current user of one of the modern methods or 2) no modern method, if the participant either did not use anything at all or used a traditional method.

Statistical Analysis

Firstly, descriptive statistics were carried out on the socio-demographic variables of the participants (Table 1), the exposure variable autonomy score (Figure 1) and the outcome variable current use of contraception (Figure 2), to better understand their distribution in the dataset. Secondly, to study the association between women's autonomy and current modern contraceptive use, we carried out the following steps: 1) a univariate logistic regression was completed for the association between women's autonomy and the used contraceptive method to obtain the crude odds ratio, 2) exploration of potential confounders was done through carrying out a univariate analysis for each socio-demographic variable (potential confounders) and the outcome and similarly, for each of the socio-demographic variables and the exposure using a chi square test or test for trend for ordered categorical variables, 3) a multivariate logistic regression adjusted for all the confounding variables was carried out.

Thirdly, a chi square significance test was carried out between the autonomy scores and the different used modern contraception methods to determine the most used method (percentage %) among women with the highest autonomy level. Finally the mediating (contributing) effect of the participant's education and employment in the association between autonomy and contraceptive use was assessed by comparing the odds ratios before and after inclusion of education and employment separately in each of the crude and

adjusted (for confounders) models. A significant reduction of 10% or more in the odds ratio after controlling for education and employment would indicate a potential mediating role. STATA version 11.0 has been used for statistical analysis.

Results

Table 1: Distribution of Population Characteristics

Total sample	**13,734(100 %)**
Age group (5 year band)	
15-19	414(3.0%)
20-24	1979(14.4%)
25-29	2758(20.1%)
30-34	2342(17.1%)
45-39	2255(16.4%)
40-44	2118(15.4%)
45-49	1868(13.6%)
Place of residence	
Urban	5583(40.7%)
Rural	8151(59.4%)
Highest educational level	
No education	4565(33.2%)
Primary	1704(12.4%)
Secondary	5996(43.7%)
Higher	1469(10.7%)
Wealth index	
Poorest	2810(20.5%)
Poorer	2761(20.1%)
Middle	2794(20.3%)
Richer	2656(19.3%)
Richest	2713(19.8%)
Living children category	
0	1045(7.6%)
1	1923(14.0%)
2	3,091(22.5%)
3	3224(23.5%)
4	2039(14.9%)
5	1178(8.6%)
6+	1234(8.9%)
Respondent currently working	11515(83.8%)
No	2212(16.1%)
Yes	7(0.1%)
Missing	
Respondent currently using modern contraception	
Yes	8448(38.5%)
No	5286(61.5%)
Husband's education	
No education	2996(21.8%)
Primary	2392(16.4%)
Secondary	6324(46.1%)
Higher	2020(14.7%)
Missing	2(0.0%)

Table (1) shows the demographic characteristics of a total of 13,734 women with valid data. 61.5% were current users of modern contraceptive methods. Although 43.7% of them had secondary level as their highest educational level only 16.1% of them were employed.

Most women (63.3%) had high levels of household decision-making index (score >3) while the minority (12.2%) had low autonomy level (score <2) (Figure1).

It was found that by increase in autonomy level there is increase in the number of women who use a modern method (p value for trend<. 001) (Figure 2).

The univariate analysis showed a marked and statistically significant difference between contraceptive use, autonomy scores and all the various socio-demographic characteristics mentioned in table 1. However only number of living children and wealth status were confounding the association between autonomy level and use of contraception, as they have changed the crude odds ratio by >=10%, therefore were controlled for in the multivariate logistic regression.

Table (2) shows both the crude and adjusted odds ratios of the association between levels of autonomy and use of contraception. In the adjusted model a significant independent association existed between autonomy level and contraceptive use (p value for trend <. 001). Women with intermediate and high autonomy were 19% (95% CI 1.04-1.35) and 32% (95% CI 1.18-1.49%) more likely to be users of modern contraception compared to women with low autonomy.

When the specific form of contraception method used was examined according to the level of autonomy in the 8,448 of women who were using a modern contraception method, intrauterine device was found to be the most used method by women in all three levels of autonomy, however it was used the most by women with high autonomy level (62.4%) (Chi square p<. 001) Table 3.

Finally, the potentially mediating effect of education and employment on the association between women's decision making autonomy and contraceptive use was examined. The changes in the odds between models with and without the

Figure 1: Percentage Distribution of Autonomy Levels of the Study Population

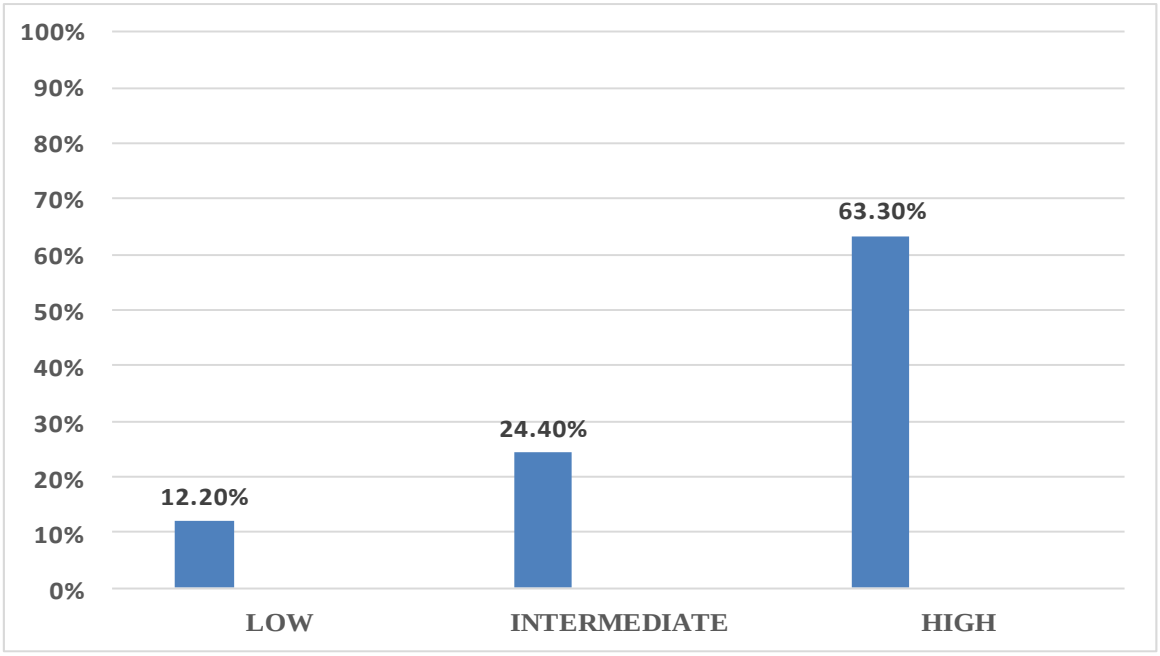

Figure 2: Percentage Distribution of the used Contraception Method (Outcome) by the Autonomy Level (Exposure)

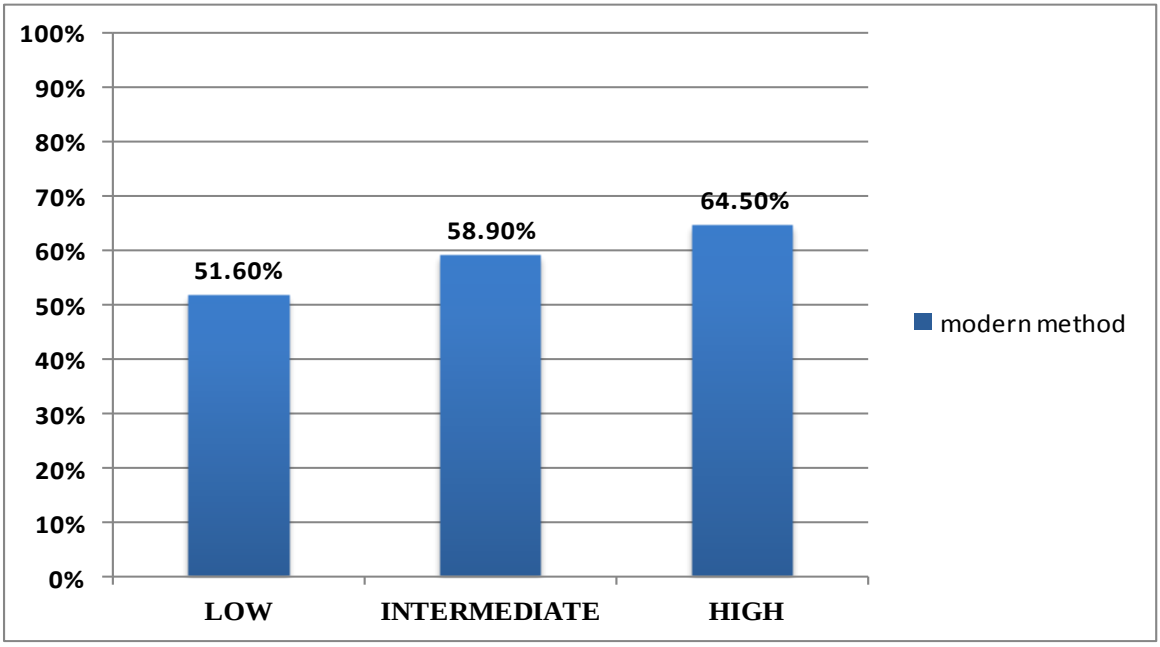

Table 2: Crude and Adjusted Odds Ratios for the Association between Autonomy and Current Use of Modern Contraception Method

Model no. And Autonomy Score Category	**Modern Contraceptive use** (0=no Modern Method, 1=Modern Method) **Odds ratio (OR)** (*n*=13734)	**95% CI***	**p-value****
1			
Low	RC#		
Intermediate	1.34	(1.19-1.51)	<. 0001
High	1.70	(1.53-1.89)	
2			
Low	RC#		
Intermediate	1.19	(1.04-1.35)	<. 0001
High	1.32	(1.18-1.49)	

1 unadjusted 2 adjusted for wealth index and No. Of living children
Reference Category (RC)
*CI, Confidence Interval
** Likelihood Ratio Test (LRT)

Table 3: Distribution of modern contraception methods by autonomy levels

Current modern contraception method	**Low autonomy** ***Number (%)****	**Intermediate autonomy** ***Number (%)****	**High autonomy** ***Number (%)****	**Total**
Pill	227 (26.1%)	462 (23.6%)	1212 (21.6%)	1901
IUD	434 (49.8%)	1115 (56.9%)	3506 (62.4%)	5055
Injections	172 (19.8%)	309 (15.8%)	687 (12.2%)	1168
Condom	11 (1.3%)	21 (1.1%)	69 (1.2%)	101
Female sterilization	14 (1.6%)	34 (1.7%)	94 (1.7%)	142
Norplant	13 (1.5%)	18 (0.9%)	47 (.8%)	78
Diaphragm/jell/foam	0 (0.0%)	1 (0.1%)	2 (0.0%)	3
Total	871	1960	5617	8448

*Column Percentages displayed
1 unadjusted 2 adjusted for wealth index and No. Of living children
Reference Category (RC)
*CI, Confidence Interval
** Likelihood Ratio Test (LRT)

mediators were modest, less than 10%. These small changes in adjustment for education and employment suggest that they are not major mediators in the link between autonomy and use of contraception Table 4.

Discussion

This study is the first to explore the association between women's household decision-making autonomy and the use of modern contraception

Table 4: Changes in the Odds Ratio of Current Contraceptive use by Autonomy after Controlling for Education and Employment (Percentage in the Parenthesis Indicates Change in the Odds Ratio after Adding Education and Employment

Model number and Autonomy level categories	**Use of modern contraception (0=no modern method used, 1=use of modern method) (*n*=13734)**		
	Odds Ratio (OR)		
	Without education or employment	**Adjusted for education**	**Adjusted for employment**
1			
Low	RC#	RC#	RC#
Intermediate	1.34	1.29(-3.7%*)	1.32(-1.49%*)
High	1.70	1.59(-6.5%*)	1.65(-2.9%*)
2			
Low	RC#	RC#	RC#
intermediate	1.19	1.15(-3.4%*)	1.18(.84%*)
High	1.32	1.26(4.6%*)	1.32(0.0%*)

1 Unadjusted
2 Adjusted for wealth index and no. of living children
Reference Category (RC)
* Changes in the ORs after adjusting for education and employment

methods using the 2008 Egypt's DHS data. The findings supported the study hypothesis that an independent significant association exists between women's decision-making autonomy and contraceptive use. Intra uterine device (IUD) was found to be the most used contraception method by women in all three levels of autonomy but was used the most by those women with high autonomy level. In addition to other socio-demographic variables, participant's education and employment were significantly associated with both autonomy and contraceptive use. However the results suggested that both education and employment did not mediate the association between women's autonomy and contraceptive use.

The major strength of the study is the use of large freely available nationwide survey representative of the population of women in Egypt. The exclusion of the un-married and pregnant women eliminated selection bias, as these women are unlikely to be using contraception. Although this was a secondary analysis, many important confounders were collected, therefore were controlled in the analysis. One of the limitations of the cross-sectional design of the study is obscuring the temporality between the main exposure and the main outcome.

However since this study is mainly focusing on the association between women's autonomy and use of contraception, it is unlikely that autonomy to be influenced by contraceptive use. The second potential limitation is relying on secondary data in obtaining autonomy measure. Autonomy is a multidimensional variable and relying on one index to try capturing it in any society might not be sufficient. Furthermore, although selection bias was extremely reduced in this study by the high response rate and exclusion of women who were unlikely to be using contraception, information was not available in the dataset about the category of women who were not using contraception because they were trying to conceive. However due to the large sample size, it is believed that these women comprised a small section, therefore it is unlikely for them to have affected the results.

The independent positive association observed in this study between women's autonomy as measured by the household decision-making index and use of modern contraception is similar to the findings by Kishor (1988) who

focused on Egyptian women's decision-making autonomy within the family. Kishor looked at three different autonomy indices; customary (making decisions related to procreation and child bearing), non-customary (making decisions outside these areas) and realized (freedom of movement) and she found non-customary index being the strongest predictor of contraceptive use compared to the other indices[29]. Non-customary autonomy included women's decisions in areas that are considered to be dominated by men in Egypt, like making daily or huge household purchases and visiting family or friends and its unlike customary autonomy where women are expected to be free to make decisions related to their children health care and what to cook for their families. Since the used decision-making index in this study is more close to the non-customary index, this concludes that our finding of the positive association between decision-making index and contraceptive use is comparable to this study. Similar association was also found in studies carried out in different Asian and African countries[30,21]. Few other studies failed to prove the existence of such association[31,32]. It is plausible that the differences in contexts and measures of women's autonomy are largely responsible for such discrepancies in the association between women's autonomy and contraceptive use. Growing literature supports the fact that women's autonomy is associated with better reproductive choices[33,34,35,36] and we believe that the use of contraception is one of them.

Our findings indicate, women with high autonomy are more likely to use modern contraception. Reasons might be that more autonomous women (being more likely better educated and employed) are more likely to have greater knowledge and access to contraception, possibly due to their greater exposure to media, greater mobility and having more frequent encounters with health care services and promoters.

Secondly, no previous studies in the literature tried to identify the specific form of contraception used by autonomous women. Our results showed Intra uterine device being used the most by women with high level of autonomy. This might be related to our findings of autonomous women being older in age and with more living children (tables not shown in this paper), therefore more likely having completed their families. The fact that IUD can offer them a long term, yet temporary family planning method, makes it a better choice for Egyptian Muslim women compared to sterilization, which is considered, prohibited in Islam. Moreover, IUDs are considered safer with less reported side effects and more practical to use for long-term contraception, therefore they have less discontinuation rates in Egypt compared to other methods[37].

Finally, women's education and employment in addition to other variables, significantly predicted their autonomy and contraceptive use, and this finding is in line with other studies[22,23,30]. Regarding mediation analysis, few studies tried to explain whether autonomy was mediating the association between women's educational level and use of contraception with conflicting results[21,38,39]. However in this study we chose to analyze the mediating effect of education and employment, as they are more prone to policy changes than autonomy and we found that autonomy acts as an independent predictor to the use of modern contraception methods and this relation is not explained by women's educational or employment levels. This suggests many efforts should be directed towards increasing Egyptian women's autonomy in order to increase their uptake of family planning services. Since most women with low autonomy are non-users of modern contraception methods and are living in rural areas, with less wealth, less education and mostly unemployed, this can be achieved in the following ways such as considering to involve women living in rural areas in credit programs. Evidence suggests such programs help strengthen women's economic role and accelerate their empowerment, therefore help women gain more control over decisions affecting them and their families such as adoption of family planning methods.

Conclusion

This study adds to the evidence the positive association between women's household decision-

making autonomy and the use of modern contraception methods. This association was found to be independent and not mediated by women's educational and employment status. This suggests more efforts should be directed towards increasing women's autonomy to achieve better use of modern family planning methods. Moreover women with high autonomy were the most users of intra uterine device, which is considered a more effective choice and should be promoted to the less autonomous women who are also less advantaged and in most need for contraception. Further research is needed on the association between women's autonomy and use of contraception by truly capturing Egyptian women's autonomy through more comprehensive measures.

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Contribution of Author

This study was conceived and designed by Dr.Hana ALSumri, and it was submitted for her masters dissertation to the University of Nottingham for the degree of master's in Public Health (MPH). The utilized data in this study were freely available from the DHS website (www.dhsprogram.com). A secondary analysis to the data was done by Dr. Hana under the supervision and guidance of her supervisor Prof. Sarah Lewis from the University of Nottingham.

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