Determinants of women's fertility in Oman

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ABSTRACT

Objective: International studies have the inverse relationship of women education and empowerment on fertility. Our aim is to study the association of women education, and empowerment with some of the fertility determinants in a community based survey.

Methods: A cross sectional survey of the health status of the Omani community was designed. Face to face interviews with 2037 women, who were or had been married including demographic data, fertility patterns, family planning, 2 women empowerment indices (decision making and freedom of movement), and other modules reproductive health, were carried out during the year 2000.

Results: About 31% of the sample was considered highly empowered in decision making and the mean number of decisions taken in the household was 4.46 for the overall sample. For freedom of movement, 29% of the sample was highly empowered with a mean number of 3.88 for the overall sample. The mean values of both indices varied significantly according to age, residence, level of education and work status. Higher freedom of movement score women were more likely to have less number of children in the first 20 years of marriage. Women of higher score of decision making index were more likely to have longer closed birth interval Those scored low in the decision making index were more likely to get a child at an earlier age.

Conclusion: There is inverse relationship between both education and empowerment and fertility. However, the 2 indices of women empowerment; decision making and freedom of movement were not always predicting the same fertility indicator, as women's empowerment is multidimensional in nature.

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The Sultanate of Oman consists of 59 wilayats with a relatively small population 2,477,687, 26% of them are expatriates mostly from South Asia. Forty-nine percent of the Omani's were females, and the percentage of Omani women in the reproductive age (15-49 years) is 48.7% of total Omani female population.[1] Within the last 30 years Oman has achieved many changes in education and health.[2] In 1970, His Majesty, Sultan Qaboos bin Said introduced the universal education policy for both genders. In 2000, among women aged 60 years or above, less than 1% had completed secondary school (12 years of education) but for women aged 20-29, nearly half (47%) had completed secondary school (12 years of education).[3] These changes are reflected on empowering Omani women, increasing the percentage of them in the work force and their participation in country development.

The terms, women's empowerment and autonomy have been used interchangeably to denote women's independence at various levels. Autonomy has been defined by Dyson and Moore[4] as the ability technical, social and psychological to obtain information and to use it as the basis for making decisions regarding one's private concerns and those intimates. The International Conference on Population and Development, Cairo, 1994, (ICPD, 1994) stated that the most important single component that a nation can invest into, is to improve the life and health is the education of girls and women.[5] The conference showed up the now commonly understood linkages between education, woman's empowerment and demographic indicators. Few studies in the Arab world have attempted to evaluate women's empowerment and its influence on demographic

indicators.[6,7] These studies tend to focus on the decision making autonomy and physical autonomy by analyzing women's involvement in decision making at the household level and her freedom of movement. Nawar[7] in her study of Egyptian women found that more autonomous women had fewer children. She focused on women's decision making within the family and involvement within the work force by creating an index of autonomy from data available from the Demographic and Health Survey, 1988, and the 1991, Survey of the Characteristics of the Household and the Role of Egyptian Women in the Family. Her study tool included more areas of autonomy than just decision making and freedom of movement. She used a 5 point index which, had the following items: self-choice of spouse; current participation in labor force, work as important to women's personal fulfillment, looking after one's own health and insisting on own opinion or trying to convince or reconcile in case of disagreement.[7] In Bangladesh, Khan et al[8] used several decision making variables to determine women's independence and found that women with lower independence had a higher fertility. Despite the drop of Total Fertility Rate (TFR) in Oman from 7.05 in 1995 to 4.8 in 2000 as of the family planning program efforts, Oman still continues to face a high TFR as well as a high rate of adolescent marriage.[9,10] In view of the shrinking global economy, Oman should be prepared to deal with this problem and therefore, there is an urgent need to study the determinants of fertility. In addition, we need also to address the issue of women's autonomy or empowerment, which highly affects the fertility rate.

Our aim is to study the association of women education and empowerment with some of fertility indicators or determinants; namely; the total number of children ever-born, age of women at her first birth and the last closed birth interval length.

Methods. *Sample design and subjects.* This study is a part of the National Health Survey 2000 (NHS 2000) 3 which consists of 2 major parts; the first is study of lifestyle risk factors and the second is reproductive health. The sample for the NHS 2000 survey was selected to be representative of the Nation as a whole with a total of 1968 households and 17,191 population. The survey adopted a multi-stage, stratified probability sampling design. In the first stage all the 10 regions of the Sultanate were chosen, and the sample was distributed according to proportional allocation of the population size in each region. In each region, one or more wilayats were randomly chosen according to the size of the population in each region. The total number of wilayats selected was 16 out of 59 total (27%). Then, each wilayat was stratified into 2 strata; the first stratum was the wilayat center representing the urban area and the second stratum was the villages or remote areas, which represent the rural areas. The urban rural ratio was 2:1, which is similar to the ratio of the 1993 national

census. The second stage was the random selection of enumeration areas (EAs) in each stratum. These EAs were the census enumeration areas, which were used during the 1993 population census, and each EA contains around 80 households. The third stage was the selection of households in each EA. Maps of the selected EAs were updated and a complete listing of all Omani households in each EA was made to obtain the sampling frame, and then the households were systematically randomly selected. All ever married women aged 15-49 years in the selected household were invited to participate in the survey. Out of 17,191 population included in the survey, a sub sample of 2037 ever married women in their reproductive age group were subjected to data analysis (11.85% of the total survey sample).

The questionnaires. Two questionnaires were used in this study; the first was the Household Health Status questionnaire, which covers the demographic data; age, sex, marital status, educational status, and working status. The second was the Reproductive Health questionnaire which comprised of several modules: fertility patterns (number of children ever born, age of women at her first marriage, last closed birth interval, for example fertility preferences, family planning, breastfeeding, ante-natal care, obstetric complication, reproductive morbidity, anemia among adolescents and pregnant women, women empowerment (household decision making and freedom of movement). The women's empowerment module consists of 2 indices: one measures women's involvement in decision making and the other measures her freedom of movement. To understand the decision making process, married women were asked "Who has the final say on…" 8 items related to decision making; namely, what food to cook, household expenditures, children's clothes, children's medicine and health care, problem solving, family planning, having another baby and visiting relatives. The index was created ranging from 0-8 (0=no involvement in decisions and 1-8=number of areas where women take responsibility for the decision). A woman is considered as least empowered if she has an index value of 0 and considered most empowered if she has an index value of 8. The value of Cronbach-coefficient used to measure the reliability of the decision making index was 0.56. A cut of score above the higher 25th percentile was then used to change the continuous variable to a bivariate one. Women scored 0-5 were considered low empowered in decision making and the other group scores 6 or above were considered as high empowered. Similarly, married women were asked, "Does your husband allow you to go alone to …………? For 6 locations namely shopping, hospital/health center, children's schools, visit relatives, visit friends and go for a walk. The index ranges from 0 to 6 (0=no freedom to move and 1-6=number of places that women can go alone). Women with 0 as their freedom of movement index are considered the least empowered while those

with 6 are considered the most empowered. The value of Cronbach- coefficient used to measure this index is 0.82. A cut of score above the upper 25th percentile was then used to change the continuous variable to a bivariate one. Women scored 0-5 were considered low empowered in the sense of their freedom of movement and the other group were considered as high empowered.

To conduct the study 25 teams from the 10 regions of the Sultanate were trained on the methodology of the survey for 2 weeks before its start. Data entry was carried out using EPI INFO version 6. Analysis of the data was carried out using statistical package for social sciences for windows version 9. Group means were compared using analysis of variance while the likelihood Chi squared test examined the distribution of data. Several multiple linear regression models were conducted to test for the effect of the 2 empowerment indices and other independent variables on each of the 3 fertility indicators; total number of children ever born, age of woman at her first birth and the last closed birth interval.

Results. **Table 1** shows the characteristics of the study sample (N=2037 women). The mean age of women was 31.02 years with mean duration of marriage of 14.4 years and mean number of ever born children 4.98. The mean age of women at their first baby was 18.48 years and the mean of their last closed birth interval; for example, birth interval before last birth was 3.16 years. About 32% of them were illiterates and the majority (73%) was from urban areas, and not working for cash outside their home, 83%. Approximately half of them have used any family planning methods during their marriage life. **Table 2** shows that the majority of women could decide for their kids'medicine, clothes, solving domestic problems and type of food cooked. About 31% of the sample was considered highly empowered in decision making and the mean number of decisions taken in the household was 4.46 for the overall sample. For freedom of movement, 29% of the sample was highly empowered with a mean number of 3.88. The majority were free to go alone to visit relatives or friends. **Table 3** shows that the mean scores of both indices; Decision making index (DMI) and Freedom of Movement index (FMI) varied according to women age, residence, level of education and work status. Urban women, university educated, and working for cash was more likely to have higher scores in both indices. **Table 4** shows that the total number of children ever born (CEB) varies according to level of empowerment and other background characteristics.

For the overall sample, neither of the decision-making nor freedom of movement index were significantly predicting the CEB in multiple linear regression. After desegregating the sample by duration of marriage layers (<=10 years, 11-20 years, 21+ years), it could be noticed that freedom of movement index is negatively correlated with the CEB in the first 2 layers.

Table 1 - Socio-demographic and other characters of the study subjects. N=2037

Characteristics	n	(%)
Age groups (years)		
15-19	95	(4.7)
20-24	401	(19.7)
25-29	450	(22.1)
30-34	371	(18.2)
35-39	383	(18.8)
40-44	218	(10.7)
45-49	119	(5.8)
Education		
Illiterate	647	(31.8)
Read and write	435	(21.4)
Primary	345	(16.9)
Preparatory	222	(10.9)
Secondary	266	(13.1)
University*	122	(6)
Work status		
Works for cash	357	(17.5)
Not working	1680	(82.5)
Place of residence		
Urban	1492	(73.2)
Rural	545	(26.8)
Use of family planning method		
Never use	1012	(49.7)
Ever use	1025	(50.3)
Mean duration of marriage	14.4 years	
Mean age of mother at first birth	18.48 years	
Mean number of ever-born children	4.98 years	

*university graduates or higher level of education (postgraduates)

Table 2 - Frequency and percentage of women with positive response to decision making index (DMI) and freedom of movement index (FMI).

Decision making Index (DMI)		
	n	(%)
Food cooked	1341	(65.9)
Expenditures	182	(9)
Clothes	1318	(72.2)
Kids medicine	1721	(94)
Problem solving	1247	(68.7)
Birth spacing	829	(43.6)
Having another baby	631	(33.1)
Visiting relatives	889	(43.7)
Freedom of movement index (FMI)		
Allowed to go shopping alone	1150	(56.5)
Allowed to go to hospital/health center	1549	(76)
Allowed to go children schools	1147	(56.3)
Allowed to visit relatives	1692	(83.1)
Allowed to visit friends	1578	(77.5)
Allowed to go for a walk	782	(38.4)

N.B N> 2037 as of multiple response

Table 3 - Association between decision making index (DMI), freedom of movement index (FMI) and sociodemographic variables.

Variables	DMI Range 0-8	FMI Range 0-6
Age groups (years)		
15-19	4.04	3.00*
20-24	4.3	3.28*
25-29	4.61*	3.75*
30-34	4.70*	3.97
35-39	4.37	4.31
40-44	4.45	4.46
45-49	3.97[RC]	4.4[RC]
	F statistics=4.01	F statistics=17.98
Residence		
Urban	4.60*	4.13*
Rural	4.06	3.20
	F statistics=34.65	F statistics=11.23
Educational Level		
Illiterate	4.05**	3.76**
Some primary	4.56	4.00
Primary	4.58	3.68**
Preparatory	4.55	3.49**
Secondary	4.89	4.24
University	4.89[RC]	4.48[RC]
	F statistics=11.23	F statistics=92.35
Work status		
Working for cash	4.83**	4.49**
Not working for cash	4.38[RC]	3.75[RC]
Total	**4.46**	**3.88**

RC-reference category, **p<0.005, N=2037

Table 4 - Significantly associated variables with the total number of children ever born in multiple linear regression.

Variables	Standardized beta coefficients	p
Overall sample		
Duration of marriage (years)	0.098	0.043
Age of women at first birth (years)	-0.325	0.000
Women age (years)	0.603	0.000
Level of education	-0.139	0.000
Ever use of family planning methods	0.060	0.016
Residence (urban=1, rural=2)	0.031	0.000
Constant		
Duration of marriage 0-10 years		
Duration of marriage (years)	0.135	0.000
Age of women at first birth (years)	-0.894	0.000
Women age (years)	0.876	0.000
Freedom of movement index	-0.055	0.025
Constant		0.000
Duration of marriage 11-20 (years)		
Age of women at first birth (years)	-0.637	0.000
Women age (years)	0.660	0.000
Freedom of movement index	-0.095	0.002
Level of education	-0.193	0.000
Ever use of family planning methods	0.072	0.018
Constant		0.000
Duration of marriage 21+ years		
Level of education	-0.370	0.000
Constant		0.000

Table 5 - Significantly associated variables with duration of the last closed birth interval, and age of mother at her first birth in multiple linear regression.

Duration of the first closed birth interval		
Variables	Standardized Beta coefficients	P
Women age (years)	0.274	0.000
Residence (urban=1, rural=2)	-0.068	0.009
Decision making index	0.055	0.034
Age at marrige (years)	-0.086	0.002
Level of education	0.087	0.007
Constant		0.000
Age of mother at her first birth		
Age at marriage (years)	0.766	0.000
Women age (years)	0.169	0.000
Level of education	0.072	0.000
Ever use of family planning methods	-0.048	0.002
Freedom of movement index	-0.053	0.001
Decision making index	0.046	0.003
Constant		0.000

Higher freedom of movement score women were more likely to have less number of children in the first 20 years of marriage. Women of a higher score of decision making index were more likely to have longer birth interval before the last birth. Rural women, those of lower levels of education and those married at higher age had shorter birth interval. **Table 5** also shows the significant predictors of age at first birth (AGFB). Older age cohorts, women married at younger age, lower level of education, not working for cash women, ever use of family planning methods, and those scored low in the decision making index were more likely to get a child at an earlier age. Freedom of movement index were found to be negatively associated with AGFB for example those scores high in this index had their first child earlier than others.

Discussion. In our study, the mean number of decisions taken in the household was 4.45 in an 8-point scale. Less than 1% of women are not involved in any decisions but nearly 17% of women are involved in 7 or 8 decisions. About 10% of the Omani women cannot go alone anywhere while almost 30% can go alone to the 6 places they enquired about. If we compare these figures with Egypt, Kishor et al[6] found that the mean numbers of decisions made by Egyptian women on a 7 point scale was 4.7. Approximately 3% of Egyptian women are not involved in any decisions but nearly 21% of Egyptian women are involved in the all 7 decisions. About 3.6% of Egyptian women were not allowed to go out alone while 35% of them can go to the 5 places mentioned in the index. From the comparison, we could notice that

Egyptian women were more empowered especially in freedom of movement index than Omani women. That could be explained by the early emancipation of Egyptian women and by their relatively higher level of education. Besides, Omani community is more conservative with different cultures and traditions than the Egyptian community. Both indices' mean values for Omani women varied significantly according to level of education and work status, which is similar to the findings in Egypt. Autonomy and education are closely linked. Education leads to autonomy where it lets women stand up to their husbands or provides a forum for them to learn more, with regards to fertility control, or both and make effective use of the health care system.[11,12]

By multivariate analysis, highly empowered women in the freedom of movement index were more likely to have less number of children than others while those highly empowered in the decision making index were more likely to get their first child at an older age and also more likely to have longer birth intervals. From the results it could be noticed that empowerment correlates inversely with fertility. However, it seems that both indices of women empowerment were not always predicting the same fertility indicator. This could be explained by the multi-dimensional concept of women empowerment for example. A single index could not stand for it. In our study we used only decision making index and freedom of movement index as 2 areas to women empowerment whereas Nawar[7] created an index of autonomy of Egyptian women including more areas as self-choice of spouse; current participation in labor force, work as important to women's personal fulfillment, looking after one's own health and insisting on own opinion or trying to convince or reconcile in case of disagreement. She found that more autonomous women had fewer children. Higher educational level predicted low fertility in all multivariate models in the present study. Our findings are totally consistent with international findings where the inverse relationship between women's educational level and fertility has been universally acknowledged.[4,11] The same findings were also seen in the Arab world.[13] Not only education can influence fertility but its interaction with the economic status can also do the same. For example illiterate women unlike the educated are at higher risk of having a large number of children with improvement in their economic conditions. Sathar and Mason's[15] study in Pakistan identified 4 ways in which education affects fertility. They mentioned that it leads to later marriage, to women marrying men with higher income, to women entering the formal employment sector which often lowers the demand for children and then to unspecified effects on women's values/interests in lowering fertility. Martin's comprehensive review of 26 Demographic and Health Surveys identified the inverse relationship between education and fertility as an important link since education is more susceptible to improvement

through policy intervention than more deeply rooted cultural conventions.[16]

However, the relationship of women education or autonomy with fertility is controversial in other studies. Sather and Mason[15] found that domestic autonomy failed to predict fertility. Angin and Shorter[17], Istanbul, Turkey, questioned the whole idea that modernization in the form of education leads to women being empowered and becoming advocates for fewer births. From the study, we can conclude the inverse relationship between both education and empowerment and fertility. Increasing women's level of education and their autonomy is considered as strong tools to make changes in demographic transition. The interaction between education and other social determinants of fertility; for example education and economic status has to be thoroughly investigated in our further studies. We can also conclude that both indices of women empowerment were not always predicting the same fertility indicator that could be explained by the multidimensional nature of women's empowerment.[18]

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Related Abstract
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Authors:	Osman A. Farrag, Mohammed S. Rahman, Jessica Rahman, Taban K. Chatterjee, M. Hisham Al-Sibai
Institute:	King Faisal University, Dammam, Kingdom of Saudi Arabia
Title:	Attitude towards fertility control in the Eastern province of the Kingdom of Saudi Arabia
Source:	Saudi Med J 1983; 2: 111-116

Abstract

This survey is an attempt to find out, from a group of women who use hospital services in the Eastern province of Saudi Arabia, their opinion regarding the use of contraceptives, the type used, and motivation.