Factors affecting the choice of maternal and child health services in a rural area of Saudi Arabia

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العوامل المؤثرة في اختيار خدمات صحة الأم والطفل في منطقة ريفية بالمملكة العربية السعودية

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تتحرى هذه الدراسة العوامل والمتغيرات المؤثرة على اختيار نوعية الخدمة الصحية لرعاية الأمومة والطفولة في منطقة ريفية بالمملكة العربية السعودية . وقد أجريت دراسة ميدانية عن طريق الزيارة المنزلية على ٣٢٩ سيدة في قرية العيينة شمال غرب مدينة الرياض . وكان الهدف من الدراسة تحديد المتغيرات المتعلقة بالأم والتي تؤثر على اختيارها لنوعية الخدمة الصحية . والمتغيرات التي تمت دراستها هي : العمر ، ومدة الزواج ، ومستوى التعليم ، والمهنة ، والدخل ، وعدد الأطفال ، ومستوى تعليم الزوج . وقد بينت التحليلات أن طول المسافة إلى مركز الخدمة الصحية ، ومستوى تعليم الأم ، وعمرها كانت أكثر المتغيرات تأثيراً على هذا الخيار .

This study examines factors affecting the choice of maternal and child health services in a rural area in Saudi Arabia. A house-to-house survey of 329 women in Al-Oyaynah village, north-west of Riyadh city, was carried out to determine the maternal factors associated with this choice. The variables examined included age, duration of marriage, education, occupation, income, parity and husband's education. The analysis showed that distance from the health service, education of the mother and her age were the strongest determinants of the choice of maternal child health service used.

Facteurs affectant le choix des services de santé maternelle et infantile dans une zone rurale d'Arabie saoudite

Cette étude examine les facteurs affectant le choix relatif aux services de santé maternelle et infantile dans une zone rurale d'Arabie saoudite. Une enquête systématique de porte en porte a été réalisée auprès de 329 femmes dans le village de Al-Oyaynah au nord-ouest de la ville de Riyad afin de déterminer les facteurs qui sont associés à ce choix du côté des mères. Les variables qui ont été examinées comprenaient l'âge, la durée du mariage, le niveau d'éducation, la profession, les revenus, le nombre d'enfants et le niveau d'éducation du mari. L'analyse a montré que la distance du domicile au service de santé, le niveau d'éducation de la mère et son âge étaient les éléments qui déterminaient le plus fortement le choix des services SMI utilisés.

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Introduction

Maternal and child health services (MCH) are essentially promotive and preventive and provide avenues for the early detection of mothers and infants at high risk of illness and mortality. As the majority of patients utilizing such services are usually not ill, and pregnancy is most frequently an uneventful physiological process, it seems logical therefore to hypothesize that, given the slightest constraints, MCH services would be underused. Previous studies have implicated mothers' education, duration of marriage and certain physical-access variables as strong determinants in the use of MCH services in some countries of the Eastern Mediterranean Region [1]. Scanty information exists on the utilization of MCH services in Saudi Arabia in general, and the rural areas in particular [2,3], but fertility rates are reported to be high in these areas [4–6].

The tremendous socioeconomic growth of Saudi Arabia in the past 15 years has resulted in the provision of high quality health and medical services, including maternal and child services, for the growing population. The primary health care approach adopted to achieve health for all by the year 2000 has brought maternal and health care services nearer to the people, even in the remotest areas [7,8]. However, reports have shown that health service utilization is determined not only by its availability but by a number of other factors [1,8,9]. For instance, in spite of the equitable distribution of primary health care and MCH services in Saudi Arabia, place of residence has been an important factor in their utilization [2,3]. Surprisingly, the rural and desert population were found to make greater use of MCH services than those in urban areas [2]. The present study examines the utilization patterns of the MCH services in a rural area of Saudi Arabia. It also compares the characteristics of users and nonusers of the private and government health services and elucidates factors that determine the choice of service.

Materials and methods

A cross-sectional study was conducted in Al-Oyaynah, a village 50 kilometres to the north-west of Riyadh, during August and September 1994. Al-Oyaynah has approximately 2000 inhabitants with a male to female ratio of 1:087. A house-to-house survey of all households in this village was carried out, and all women of child-bearing age who had a child less than five years old were interviewed. In all, 329 women satisfied the inclusion criteria, a number which constituted 16.5% of the total population of Al-Oyaynah. A structured questionnaire was administered by the village health-centre nurse to all the selected mothers. The questionnaire included items of information on the demographic characteristics of the mother, her fertility history (including history of the most recent pregnancy), utilization pattern of MCH services and possible constraints hampering utilization.

The data were processed on a microcomputer using the *BMDP* statistical software package. Descriptive summary statistics, such as mean and standard deviation, were computed for continuous variables and proportions for nominal characteristics of the women. The chi-square test was used to assess the statistical significance of association between any two nominal variables. In order to determine which variables distinguished between women using private hospitals, government hospitals and primary health care and services, the discriminant analysis procedure was used. Traditional birth attendants and midwife-managed

MCH services were defined in this study as private hospitals. All statistical tests of significance were at the 5% probability level.

Results

The demographic characteristics of the 329 women interviewed in this study, categorized by their choice of maternal health service, are presented in Table 1. A univariate analysis showed a statistically significant relationship between each of the variables—age, duration of marriage, education, occupation, income, parity, husband's education—and the choice of health service. About 8% of the subjects used private clinics, and about 25% used the MCH services located in primary health care centres (PHCs); the majority utilized MCH services in a hospital setting. A high proportion (58%) of those who utilized the private clinics were 35 years old or above, compared to 13% and 16% who used government primary health care clinics and MCH services in government hospitals. Most of those utilizing private clinics were either illiterate or could only read and write and had been married for 15 years or more. They were predominantly housewives, and 80% of them had a family income of less than 5000 riyals a month. Their husbands also had, at most, an intermediate level of education.

None of the women who did not use the government MCH services, either at the primary health care clinic or the general hospital, thought distance, nonavailability of female doctors, language of doctors or previous experience at such clinics was a factor in their choice of health service. However a sizeable proportion of those utilizing the private clinics travelled more than 15 kilometres to receive the service. Table 2 shows the distance to hospital, family income and choice of health service. There is a statistically significant association between each of these variables and the type of health service chosen ($p < 0.001$).

A combination of sociodemographic and access variables that best predicted the choice of MCH services, determined in a stepwise discriminant analysis procedure, showed distance as the best discriminant variable. This was followed by the mother's education and age respectively. The other variables were not statistically significant. The coefficients of the classification function for each MCH service is presented in Table 3. These functions showed an overall average classification of the cases (56%). The best classification function of 73.8% was achieved for those utilizing PHCs; use of private MCH services was next (55.6%), and the worst was use of hospitals (49.5%). Apparently, the classification of patients into PHC users rather than hospital users is responsible for the high misclassification observed in this study. If no distinction were made between MCH services in government hospitals and those in PHCs, the percentage of correct classifications would have increased to 90%.

The place of delivery of the most recent child by mother's characteristics is shown in Table 4. About 10% delivered at home, 15% in PHCs, and 75% in hospital settings. All variables considered independently were statistically significantly in relation to the place of delivery. A good proportion of home deliveries were by old (35 years and above), multiparous, low-income and illiterate housewives who had been married for 15 years or more.

Discussion

The result of a univariate analysis of this study has shown that age, duration of marriage, education, occupation, family income,

Table 1 **The distribution of women by demographic characteristics and type of MCH services used**

Characteristics	Government		Private	
	PHC	hospital	clinic	Chi-square
Age (years)				
15–19	4	3	0	$\chi^2_{10} = 48.355$
20–24	20	36	1	$p < 0.0001$
25–29	24	76	1	
30–34	23	65	6	
35–39	11	31	16	
40–44	0	4	2	
Duration of marriage (years)				
0–4	15	11	1	$\chi^2_8 = 43.367$
5–9	28	75	2	$p < 0.0001$
10–14	18	65	3	
15–19	18	46	10	
20+	9	18	10	
Education				
Illiterate	10	69	21	$\chi^2_{10} = 65.272$
Read and write	3	11	4	$p < 0.0001$
Primary	8	39	0	
Intermediate	17	29	0	
Secondary	31	48	0	
University	13	19	1	
Occupation				
Professional	6	7	0	$\chi^2_{10} = 26.202$
Skilled	20	25	0	$p < 0.001$
Semi-skilled (small business)	0	2	0	
Unskilled	0	1	0	
Housewives	48	173	27	
Students	8	11	0	
Parity				
1–4	53	108	9	$\chi^2_4 = 16.07$
5–9	26	95	12	$p < 0.0001$
10+	2	12	5	
Husband's education				
Illiterate	1	17	8	$\chi^2_{10} = 44.16$
Read and write	3	17	5	$p < 0.0001$
Primary	21	70	8	
Intermediate	19	50	3	
Secondary	20	34	0	
University	16	33	1	

Table 2 The relationship of accessibility variables to the choice of MCH services

Variable	Type of service PHC	Hospital	Private clinic	Chi-square
Distance (km)				
<5	36	118	11	$\chi_4^2 = 110.97$
5–14	46	94	4	$p < 0.00001$
15+	0	3	12	
Family monthly income (riyals)				
<2500	3	6	4	$\chi_6^2 = 29.90$
2500–4999	20	93	17	$p < 0.00001$
5000–9999	54	102	5	
10 000+	5	14	0	

Table 3 Coefficients of the classification function for each type of MCH service

Variable	Type of health service Private	Hospital	PHC
Age of mother	1.65348	1.51035	1.47750
Education of mother	1.96080	2.35133	2.64342
Distance to MCH	0.66901	0.19001	0.23470
Constant	−34.62710	−27.25732	−27.69252

Table 4 The place of delivery by mother's demographic characteristics and distance to service

Characteristic	Place of delivery Home	Hospital	Health care centre	Chi-square
Age (years)				
15–19	0	7	0	$\chi_4^2 = 61.724$
20–24	1	50	7	$p < 0.00001$
25–29	3	83	14	
30–34	6	72	18	
35–39	20	30	8	
40–44	2	4	0	
Parity				
1–4	91	47	15	$\chi_4^2 = 32.778$
5–9	16	89	29	$p < 0.00002$
10 +	7	9	3	

Table 4 continued

Characteristic	Home	Place of delivery Hospital	Health care centre	Chi-square
Monthly income (riyals)				
< 2500	3	8	3	$\chi^2_6 = 30.334$
2500–4999	22	83	87	$p = 0.00003$
5000–9999	7	138	17	
10 000+	0	19	0	
Mother's education				
Illiterate	23	55	22	$\chi^2_{10} = 65.63$
Read and write	5	9	4	$p < 0.000001$
Primary	4	38	6	
Intermediate	0	36	9	
Secondary	0	74	6	
University	0	34	0	
Husband's education				
Illiterate	9	11	6	$\chi^2_{10} = 67.866$
Read and write	7	9	2	$p < 0.000001$
Primary	12	65	23	
Intermediate	4	61	8	
Secondary	0	47	7	
University	0	50	1	
Occupation				
Professional	0	13	0	$\chi^2_{10} = 20.79$
Skilled	0	42	3	$p = 0.0084$
Semi-skilled (small business)	0	2	0	
Unskilled	0	1	0	
Housewives	32	174	43	
Students	0	14	1	
Duration of marriage (years)				
0–4	2	23	2	$\chi^2_8 = 50.004$
5–9	2	94	10	$p < 0.000001$
10–14	3	64	19	
15–19	14	50	11	
20 +	11	15	5	
Distance (km)				
< 5	9	123	35	$\chi^2_4 = 133.36$
5–14	9	122	12	$p < 0.00001$
15+	14	1	0	

parity and distance are significantly corre-lated with the choice of MCH services used. These findings are in consonance with pre-vious reports [6,8,10,11]. In fact, the gov-ernment-provided MCH service is preferred by most, because of its proximity to the mothers and affordability, since it is a free service. It is surprising, however, to find that most women who are illiterate, older and with a poor family income and long duration of marriage are the majority among those who resort to traditional birth attendants and private MCH services managed by mid-wives (classified in this study as private clinics). These people even travel long dis-tances of more than 15 kilometres to receive such services. The only explanation for this practice is that the women found it difficult to change their habits, having been used to those services before the advent of the gov-ernment service. Private clinics had been in-troduced before the establishment of the government MCH services, and the women patronizing them who were over 35 years old may have found these services satisfac-tory enough for their purpose. In any case, these women are in the minority (10%). Al-ternatively the younger women utilizing the government MCH services could have started child-bearing at or around the time the services were established [12].

However, the univariate analysis that implicated these variables could only pro-vide a preliminary idea of which variable has an important association with the choice of MCH services. The discriminant analytic procedure used has an advantage over the univariate analysis, because it se-lected potential determinants after adjusting for other variables in the study.

The result of this discriminant analysis highlights distance, mother's education and age as the strongest determinants of the choice of MCH services, after adjusting for all other variables. The high classification rate achieved by the three variables in the analysis when no distinction is made be-tween MCH services in government, hospi-tal and primary health care settings is indicative of the relevance of these three variables. In fact, it is not unlikely for re-spondents to fail to distinguish clearly be-tween the two MCH services, as both are provided by the government and are lo-cated not too far from each other [9]. The factors identified are consistent with previ-ous studies, which report multiparity, social class, transportation problems, age and re-ported diseases as factors which account for the differential use of health services [10,13–15]. Education and family income are good indicators of socioeconomic class. The multivariate analytic procedure used in this study has selected mother's education as the best variable among all other vari-ables used in determining social class. A study conducted in Bahrain also empha-sized socioeconomic status and mother's education as factors influencing the use of maternal and child health services [16]. The educational and socioeconomic levels of the people of Saudi Arabia have in-creased tremendously in the past 15 years. It is not surprising, therefore, that it consti-tutes an important determinant in the use of government MCH services in this study [17].

In conclusion, the importance of mother's education and age as strong dis-criminating factors of the choice of MCH services, found in this study and consistent with the previous studies, deserves further comment. The younger and more educated mothers who utilized the government MCH services could have started childbearing at the inception of these services. The avail-ability and accessibility of these services, coupled with health education prog-rammes, could have contributed greatly to such a practice [12,18]. The utilization of

maternal health services varies across different cultures for a variety of reasons [1]. But it appears from this study that the factors determined are universal.

The low prevalence of deliveries at home (10%) found in this study is a good indicator of an increased use of modern health services in the kingdom. Previous investigators have reported a prevalence of home deliveries as high as 50% in the rural areas of Saudi Arabia [3]. This large decrease in the percentage of home deliveries is a clear manifestation of the impact of the primary health care approach to achieve health for all by the year 2000, which has now been almost fully implemented in Saudi Arabia [19,20]. The fact that a small proportion of women are not utilizing this scheme could be attributed to inertia. This could be seen in the percentage utilizing the private health care delivery system managed either by traditional birth attendants or midwives. These women were found to be mainly illiterates and 35 years of age or over. These are, most probably, the mothers who were used to this system before the advent of modern government MCH services.

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In order to achieve its objective, the functions of the World Health Organization shall be:

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l) to promote maternal and child health and welfare and to foster the ability to live harmoniously in a changing total environment.

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Article 2 of the Constitution of the World Health Organization