Shiraz E-Med J. 2015 May; 16(5): e26726. DOI: 10.17795/semj26726

Published online 2015 May 10. **Research Article**

Assessment of Social Determinants Related to Mother and Child Healthcare Services: A Cross Sectional Study in Shiraz, Iran 2013

Leila Malek Makan [1]; Mohsen Moghadami [2]; Mehrab Sayadi [3,*]; Hamideh Mahdavi Azad [4]; Minoo Alipouri Sakha [3,5]

[1]Department of Community Medicine, Shiraz Nephro-Urology Research Center, Shiraz University of Medical Sciences, Shiraz, IR Iran
[2]Department of Internal Medicine, Shiraz University of Medical Sciences, Shiraz, IR Iran
[3]Cardiovascular Research Center, Shiraz University of Medical Sciences, Shiraz, IR Iran
[4]Department of Community Medicine, Shiraz University of Medical Sciences, Shiraz, IR Iran
[5]Department of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, IR Iran

*Corresponding Author: Mehrab Sayadi, Cardiovascular Research Center, Shiraz University of Medical Sciences, Shiraz, IR Iran. Tel: +98-7132122320, E-mail: sayadi_me@yahoo.com

Received: January 11, 2015; **Revised:** February 7, 2015; **Accepted:** April 14, 2015

Background: Providing healthcare for mothers and children is one of the major health duties in any community and is considered as a health index. Regarding the analysis of healthcare services, Anderson's behavioral model has received great attention. According to this model, social factors play a determining role in consumption of healthcare services.

Objectives: The present study aimed to determine social factors affecting healthcare consumption.

Patients and Methods: This descriptive, cross-sectional, population-based study was conducted on 735 women who were mothers and were aged between 15 and 49 years old. These subjects were selected through multi-stage cluster random sampling. The study data were collected using a researcher-made data gathering form. The data were entered into the SPSS software and analyzed using descriptive statistics and multiple logistic regression tests with the enter method. The significance level was set at < 0.05.

Results: The mean age of the studied women was 30.6 ± 5.7 years. Most of them (628 cases, 85.4%) were housewives and 317 (43.1%) had high school education. Besides, 570 women (77.6%) had no incomes and 94 (12.8%) mentioned that they had received no services during pregnancy. Nevertheless, 74 (56.1%), 248 (33.8%) and 74 (10.1%) had received services from governmental, private, or both centers, respectively. Women's and husbands' education levels as well as women's occupation affected reception of services.

Conclusions: According to the results, a large number of the subjects had not received services and in case they had, it was from the private sector. Moreover, social factors, such as education level, income and occupation, were influential factors regarding received services.

Keywords: Healthcare Services; Social Determinant of Health; Cross-Sectional Studies; Iran

1. Background

Nowadays, health has a wider spectrum, with more attention being paid to non-medical determinants of health, including inheritance, lifestyle, environment and socioeconomic status (1). Social determinants of health, such as level of income and education, nutrition, and social status, play a critical role in people's health status. Thus, identification of these determinants can provide evidence for development of social and health policies in order to achieve health goals and establish equity in health (2).

Mothers and children are among vulnerable groups comprising the major consumers of health services in the world (3). According to the World Health Organization (WHO), attention to mothers and children is one of the basic priorities of primary health care. Therefore, it should be considered as a priority in development and execution of primary care programs in every country (4).

Using health services depends on various socioeconomic factors, which have been investigated by several studies. These factors include social constructs, service providing systems, accessibility and quality of services, distance to the service providing location, cost of services, providers' professional skills, education level, cultural beliefs and practice, sexual discrimination, women's status, disease patterns, and women's autonomy in decision-making in their families (5-10). Regarding individuals' health seeking behavior and consumption patterns, which have widely attracted the researchers' and policymakers' attention, different conceptual models have been proposed among which, Andersen's behavioral model has attracted more attention (8-10). According to this model, social factors along with health services system factors and individual factors have a pivotal role in consumption of health services. These factors consist of predisposing factors (age, sex, family size and occupation), enabling factors (income, insurance and housing),

and need factors (status, disease symptoms and disability days) (11-13).

Having a correct image of services consumption can be followed by planning for achieving or improving the quality of services. Considering limited available resources, identification of effective factors in consumption of health services is highly important from economical and health points of view and is essential for evaluation of function of policies related to accessibility in the health system.

2. Objectives

The present study aimed to identify some social determinants of receiving health services among mothers referring to public and private health centers of Shiraz, Iran.

3. Patients and Methods

3.1. Studied Population

This descriptive-analytical, cross-sectional, population-based study was conducted on 735 mothers, aged between 15 and 49 years old. These candidates were selected through multi-stage cluster random sampling in Shiraz, Iran, during year 2013. In order to obtain the minimum sample size, percentage of the users of the public sector was considered 50%. Considering Confidence Interval (CI) of 95%, error of 5%, assumption of infinity of the target population, and sampling with an effect equivalent to one-ninth, a 735-case sample size was determined for the study. At first, Shiraz was divided into three zones according to healthcare service centers. Next, the samples were allocated to these three zones according to proportional size. Then, starting from a randomly selected house on the street where the healthcare center was located, the researchers invited individuals to participate in the study. The houses were systematically selected with five intervals.

The sampling unit in this study was women. The inclusion criterion of the study was being between 15 and 49 years old and the exclusion criterion was not having below six-year-old children. The data were collected using a researcher-made data gathering form including the parents' demographic information and questions regarding health services received by the mother and her child. In order to assess the content and face validity of the data collection instrument, it was reviewed by specialists before data collection and necessary corrections were applied. Therefore, in order to enhance the instrument's reliability and decrease the rate of errors, trained questioners, two environmental supervisors and two academic supervisors participated in the study. Moreover we calculated the Cronbach's Alpha as 0.78. The participants gave their verbal consent to take part in the study. In case a woman was not willing to participate in the study, the next-door neighbor would be asked to participate instead. After data collection, the data were entered into the SPSS statistical software, version 16 (SPSS Inc, Chicago, IL, USA) and analyzed using descriptive statistics and simple and multiple logistic regression with the enter method. All the variables of our study were analyzed by the univariate test, and we considered P values of below 2% (0.02) for the multivariate model. Categorical variables were interred in the multivariable model if the P value of one of the categorical levels was below 2% (0.02). Significance level was set at 5% for all tests.

4. Results

This study was conducted on 735 mothers with the mean age of 30.6 + 5.7 years (median age: 30 years), who had children younger than six years old. According to the results, most of the respondents (mothers) were housewives (n = 628, 85.4%) and had high-school education (n = 317, 43.1%). Furthermore, 77.6% of the mothers (n = 570) had no specific income. The mean age of their husbands was 35.7 + 6.7 years and that of their last child was 11.3 + 10.2 months. Additionally, 41.5% of the mothers (n = 305) had only one child. The average family size was 3.9 in this study. The participants' demographic and descriptive information is presented in Table 1.

Among the mothers who had received health services for their last pregnancy, 56.1% (n = 368), 33.8% (n = 222) and 10.1% (n = 66) had received the services from public, private, or both sectors, respectively. In addition, 87 subjects (11.8%) had received the services incompletely.

Moreover, 364 mothers (49.5%) stated that they had consumed folic acid for one to nine months before pregnancy. Among these mothers, 10.9% (n = 40), 25.6% (n = 93) and 2.6% (n = 9) had received this supplement from public, private, or both sectors, respectively. Also, 673 mothers (91.6%) reported taking folic acid during their pregnancy. Among all participants, 75.8% (n = 557) had completely used pregnancy supplements; i.e. iron and multivitamin, 14.4% (n = 128) had used the supplements incompletely, and 6.5% (n = 48) had not used the supplements at all.

Furthermore, 72.8% of the mothers (n = 525) mentioned that they had received postnatal care among whom, 47.9% (n = 352) had referred to the public sector. Furthermore, 24.9% (n = 183) stated that they had voluntarily selected the private sector and 3% (n = 22) claimed that their reference to the private sector was due to the recommendation of public sector's staff.

According to the results, 484 mothers (65.9%) had referred for periodic Pap smear examinations. Among these mothers, 50.2% (n = 241), 41.9% (n = 201) and 7.9% (n = 38) had received this service from the public, private, or both sectors, respectively. However, four participants (0.82%) did not answer this item. Also, 243 subjects (33.1%) stated that they had not received this service. Among mothers who had referred to the private sector, 91.3% (n = 218) had

Table 1. Demographic and Socioeconomic Variables of the Study Population

Parameter	Number/Mean	Percentage/SD
Woman's Features		
Age, y	30.6	5.7
Occupation		
Housewife	628	85.4
Others	107	13.6
No answer	7	1.1
Education		
Illiterate	53	7.2
Primary school	182	24.8
High school	317	43.1
Associate degree	165	22.4
≥ Bachelor	10	1.4
No answer	8	1.1
Income (per 10000 Rials)		
No income	570	77.6
< 500	27	3.7
500 to 1000	53	7.2
> 1000	39	5.3
No answer	46	6.3
Husband's Features		
Age, y	35.7	6.7
Occupation		
Employee	237	32.2
Worker	137	18.6
Self-employed	281	38.2
Jobless	14	1.9
Other	62	8.5
No answer	4	0.5
Education		
Illiterate	40	5.4
Primary school	196	26.7
High school	303	41.2
Associate degree	165	22.4
≥ Bachelor	27	3.7
No answer	4	0.5
Income (per 10000 Rials)		
No income	21	2.9
< 500	140	19
500 to 1000	322	43.8
> 1000	246	33.5
No answer	6	0.8

selected this sector voluntarily and 8.7% (n = 21) due to the public sector staff's recommendation.

Moreover, 619 mothers under study (84.2%) reported reception of consultation and contraceptive tools before pregnancy. Among these mothers, 82.1% (n = 462) 13.3% (n = 75) and 4.6% (n = 26) had received these services from public, private, or both sectors, respectively. Among those who had referred to the private sector, 94.1% (n = 96) had selected this sector voluntarily and 5.9% (n = 6) due to the public sector staff's recommendation.

Furthermore, 701 mothers (95.4%) mentioned that they had received children's growth monitoring services, from birth to the age of 77 months. Among these mothers, 86.8% (n = 638), 2.7% (n = 20) and 2.9% (n = 21) had received this service from public, private, or both sectors, respectively. Furthermore, 99.7% of the mothers (n = 733) stated that their children had received the necessary vaccines.

Based on the findings, 25 participants (3.4%) had no information about the type of services in the public sector. On the other hand, 9.1% (n = 67), 1% (n = 7), 51% (n = 375), 50.3% (n = 370), 6.7% (n = 49) and 1.4% (n = 10) were informed about these services through mass media, Internet, staff, family, pamphlets, and other methods, respectively. In addition, 702 participants (95.5%) reported having easy access to public health services. Also, 379 (51.6%), 22 (3.0%), 310 (42.2%) and 10 subjects (1.4%), respectively, mentioned themselves, their husbands, both, and others as the main decision-makers for selection of the service-providing sector. The major reason for selection of the public sector was closeness to the place of residence (n = 396, 91.2%). On the other hand, the private sector was mainly selected due to the staff's and physicians' skills and specialty (n = 157, 54.5%). that there was a significant difference between two group in some reasons such as one's interest, staff's skills, staff's behavior, closeness to place of residence (P value < 0.05) (Table 2). In addition, lack of awareness about service provision in the public sector (n = 67, 23.3%), unskilled staff of the public sector (n = 43, 14.9%), and crowdedness of the public centers (n = 43, 14.9%) were mentioned as the reasons for lack of reference to the public sector.

Table 2. Reasons for Selection of the Service-Providing Sectors (Public/Private) by the Study Population

Reasons for Selection of the Service Providing Sector [a]	Public (n = 434) [b]	Private (n = 288) [b]	P Value
One's interest	375 (86.4)	133 (46.2)	< 0.001
Others' recommendation	42 (9.7)	8 (2.8)	0.061
Staff's/physicians' skills	130 (29.9)	157 (54.5)	< 0.001
Staff's appropriate behavior	180 (41.5)	15 (5.2)	< 0.001
Closeness to place of residence	396 (91.2)	16 (5.6)	< 0.001
Inexpensiveness	341 (78.6)	-	-
Proper queuing	46 (10.6)	33 (11.5)	0.717
Others	8 (1.8)	4 (1.4)	0.771 [c]

[a] Reasons were presented through multiple-choice items.
[b] Values are presented as No (%).
[c] Fisher exact test was used.

The results of regression analysis revealed woman's occupation (P < 0.05), woman's level of education (P < 0.05), and husband's education level (P < 0.05) as the effective factors in consumption of services. However, woman's age (P = 0.449), insurance coverage (P = 0.157), husband's occupation (P = 0.341), and woman's and her husband's income levels (P > 0.05) had no impacts on services consumption (Table 3).

Table 3. Effective Socioeconomic Factors in Selection of Service-Providing Sectors (Public/Private) Determined by Logistic Regression Analysis

Variable	Unadjusted OR (95%CI) [a]	P Value	Adjusted OR (95%CI) [b]	P Value
Woman's age, y	1.01 (0.98 - 1.04)	0.214	-	-
Woman's occupation				
Housewife	ref	-	ref	-
Employee	4.19 (2.51 - 6.99)	< 0.001	2.46 (1.40 - 4.2)	0.031
Woman's education				
≤ Primary school	ref	-	ref	-
Middle school	1.84 (0.60 - 5.60)	0.002	2.12 (0.7 - 6.1)	0.161
High school and diploma	5.50 (1.92 - 16.04)	< 0.001	4.14 (1.5 - 11.7)	0.007
University	7.43 (6.51 - 17.97)	< 0.001	5.62 (1.8 - 17.4)	0.003
Woman's income (per 10000 Rials)				
No income	ref	-	ref	-
< 500	1.72 (0.69 - 4.22)	0.232	1.04 (0.3 - 3.4)	0.939
500 to 1000	3.27 (1.69 - 6.30)	< 0.001	0.93 (0.3 - 2.4)	0.889
> 1000	5.32 (2.89 - 15.52)	< 0.001	1.38 (0.4 - 4.7)	0.609
Insurance				
Yes	ref	-	ref	-
No	0.58 (0.37 - 0.91)	0.020	0.68 (0.4 - 1.6)	0.157
Husband's occupation				
Unemployed	ref	-		
Employed	1.08 (0.77 - 1.51)	0.633	-	-
Husband's education				
≤Primary school	ref	-	ref	-
Middle school	2.60 (0.87 - 5.69)	0.068	1.64 (0.5 - 5.4)	0.414
High school & diploma	3.58 (2.62 - 7.49)	< 0.001	2.65 (0.8 - 8.8)	0.112
University	4.52 (3.21 - 9.45)	< 0.001	4.02 (1.1 - 14.9)	0.038
Husband's income (per 10000 Rials)				
No income	ref	-	ref	-
< 500	1.09 (0.28 - 4.13)	0.897	1.78 (0.3 - 3.4)	0.379
500 to 1000	2.49 (0.69 - 8.80)	0.164	2.87 (0.8 - 9.8)	0.092
> 1000	5.61(1.55 - 16.80)	0.008	3.38 (0.9-11.8)	0.056
Family size	0.65(0.53 - 0.79)	< 0.001	0.85 (0.64-1.43)	0.289

[a] Univariate logistic regression analysis.
[b] Multivariate logistic regression analysis.

5. Discussion

Providing healthcare for mothers and their children is one of the major indexes for all health systems. However, there is a lack of proper coverage of public health services in the cities of Iran. The present study aimed to determine the social factors that affect healthcare consumption.

The results of logistic regression analysis indicated woman's occupation and education level and husband's education level as effective factors in services consumption. However, woman's occupation had a more significant effect on reception of services from the private sector compared to the public sector, in a way that services consumption from the private sector was 2.5 folds higher among employed women compared to the housewives. Also, literate women and those with high-school education were four to six folds more willing to use the private sector. Nevertheless, this was not true about individuals with academic education, which might be due to the small sample size. Husband's level of education was also effective on consumption of services from the private sector. In this respect, women whose husbands had associate or higher degrees were four to six folds more willing to use the private sector compared to those with illiterate husbands. In our country, similar to some developing countries, people do not like to present the valid income. So we could not discuss certainly about the impact of valid income on to receiving service.

Gabrysch et al. conducted a study in the Arsi region of central Ethiopia and reported mother's age, number of pregnancies, not enough time for referring , education, marital status, and woman's economic status as the main determinants of using pregnancy care (14). Besides, a previous study performed in Bangladesh indicated that quality of service, age, sex and distance to the service-providing location were effective on selection of centers (15). In addition, a research in rural areas of India demonstrated that income level and literacy were of great importance in decision-making for reception of healthcare services. The results of this study also showed that families with higher education levels mostly referred to centers with better medical facilities (6). Adamson disclosed that socioeconomic factors, race and sex had determining effects on treatment behavior of the patients suffering from respiratory disorders. According to the results, colored less than whites, the poor less than the rich, and women less than men sought for treatment in case of diseases (16). Another study also revealed that education level, number of pregnancies, insurance coverage and geographical region were effective on consumption of health services (17). In the present study, women's and their husbands' income levels were measured separately and had no relationships with services consumption.

Lopez et al. assessed socioeconomic determinants and inequity in consumption of healthcare services in Ecuador using Andersen's behavioral model and evaluated three outcomes, namely utilization of preventive services, number of visits and number of hospitalizations. In all three, the families in the lowest quartile were least probable to use health services (10).

Closeness to the place of residence was the most significant reason for selection of public services. It was shown that improved access to public services could lead to greater use of public services. However, staff' and physicians' skills were the major reason for selection of private services. Khanjari et al. performed a research on the viewpoints of individuals receiving pregnancy care regarding effective factors in consumption of such services and concluded that a considerable percentage of pregnant women did not use these services completely. This was mainly attributed to women's feeling of no need for these cares, not trusting the caregivers, and unawareness of how to properly refer to health centers (4). These results were in line with those of the current study. In developing countries, consumption of health services is restricted by various factors, including preparedness of services, availability, quality of services, and characteristics of the users and the society they live in. These factors may particularly include distance to service-providing location, cost of services, providers' professional skills, users' socioeconomic status, and women's autonomy in decision-making in the family (18-21).

In the current study we concluded that some socioeconomic factors could have an effect on choosing health service providers; accessibility and staff's skillfulness were the major reasons for the tendency towards utilization of services from the private and public sector.

Acknowledgements

The authors would like to thank Ms. A. Keivanshekouh at the Research Improvement Center of Shiraz University of Medical Sciences for improving the use of English in the manuscript.

Authors' Contributions

Leila Malek Makan: contributed to the design of the study, provided intellectual content of critical importance to the work described, and read and approved the final manuscript. Mohsen Moghadami: contributed to the design of the study, revised the manuscript, and read and approved the final manuscript. Mehrab Sayadi contributed to the design of the study, analyzed the data, revised the manuscript, and read and approved the final manuscript. Hamideh Mahdavi Azad: contributed to the design of the study, revised the manuscript, and read and approved the final manuscript. Minoo Alipouri Sakha: contributed to provision of data, and read and approved the final manuscript.

Funding/Support

This study was funded by the Research Vice-chancellors of Shiraz University of Medical Sciences, Shiraz, IR Iran.

References

1. Motlagh SM, Oliaemanesh AR, Beheshtian M. *[Health and social factors determining]. In Persian.* 2 edTehran: Entesharat movafagh; 2008.
2. Starfield B. State of the art in research on equity in health. *J Health Polit Policy Law.* 2006;**31**(1):11–32.
3. Rezasoltani P. *[Maternal and Child Health]. In Persian.*Tehran: Sanjesh; 2003.
4. Khanjari S, Mola F, Hosseini F. [Prenatal care utilization and its factors affecting to receive prenatal care from clients' perspectives]. In Persian. *Ijn.* 2006;**19**(45):37–48.
5. Choudhury N, Ahmed SM. Maternal care practices among the ultra poor households in rural Bangladesh: a qualitative exploratory study. *BMC Pregnancy Childbirth.* 2011;**11**:15.
6. Kesterton AJ, Cleland J, Sloggett A, Ronsmans C. Institutional delivery in rural India: the relative importance of accessibility and economic status. *BMC Pregnancy Childbirth.* 2010;**10**:30.
7. Navarro V. Assessment of the World Health Report 2000. *Lancet.* 2000;**356**(9241):1598–601.
8. Amin R, Shah NM, Becker S. Socioeconomic factors differentiating maternal and child health-seeking behavior in rural Bangladesh: A cross-sectional analysis. *International Journal for Equity in Health.* 2010;**9**(1):9.
9. Hovick SR, Freimuth VS, Johnson-Turbes A, Chervin DD. Multiple health risk perception and information processing among African Americans and whites living in poverty. *Risk Anal.* 2011;**31**(11):1789–99.
10. Lopez-Cevallos DF, Chi C. Health care utilization in Ecuador: a multilevel analysis of socio-economic determinants and inequality issues. *Health Policy Plan.* 2010;**25**(3):209–18.
11. Poorreza AGH. [Treatment seeking behavior of residents of Tehran and related factors]. In Persian. *J Sch Pub Health and Inst Pub Health Res.* 2010;**7**(2):1–13.
12. Smedley BD, Syme SL, Committee on Capitalizing on Social S, Behavioral Research to Improve the Public's H. Promoting health: intervention strategies from social and behavioral research. *Am J Health Promot.* 2001;**15**(3):149–66.
13. Fergusson DM, Grant H, Horwood LJ, Ridder EM. Randomized trial of the Early Start program of home visitation. *Pediatrics.* 2005;**116**(6):e803–9.
14. Gabrysch S, Cousens S, Cox J, Campbell OM. The influence of distance and level of care on delivery place in rural Zambia: a study of linked national data in a geographic information system. *PLoS Med.* 2011;**8**(1):e1000394.
15. Rahman SA, Kielmann T, McPake B, Normand C. Healthcare-seeking behaviour among the tribal people of Bangladesh: Can the current health system really meet their needs? *J Health Popul Nutr.* 2012;**30**(3):353–65.
16. Adamson J, Ben-Shlomo Y, Chaturvedi N, Donovan J. Ethnicity, socio-economic position and gender--do they affect reported health-care seeking behaviour? *Soc Sci Med.* 2003;**57**(5):895–904.
17. Celik Y, Hotchkiss DR. The socio-economic determinants of maternal health care utilization in Turkey. *Soc Sci Med.* 2000;**50**(12):1797–806.
18. Williams DR, Costa MV, Odunlami AO, Mohammed SA. Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *J Public Health Manag Pract.* 2008;**14 Suppl**:S8–17.
19. Kehrer BH, Wolin CM. Impact of income maintenance on low birth weight: evidence from the Gary Experiment. *J Hum Resour.* 1979;**14**(4):434–62.
20. Mechanic D. Disadvantage, inequality, and social policy. *Health Aff (Millwood).* 2002;**21**(2):48–59.
21. Malqvist M, Yuan B, Trygg N, Selling K, Thomsen S. Targeted interventions for improved equity in maternal and child health in low- and middle-income settings: a systematic review and meta-analysis. *PLoS One.* 2013;**8**(6):e66453.