Factors affecting utilization of Antenatal Care among reproductive age group Women (15-49 years) in an urban squatter settlement of Karachi

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Abstract

Objectives: To describe the socio-demographic characteristics and utilization pattern of antenatal care of reproductive age group women (15-49 years) in an urban squatter settlement of Karachi and to assess and compare the knowledge on antenatal care between women who received and those who did not receive antenatal care.
Methods: A community-based cross sectional survey was conducted and a sample of 323 women was taken through systematic sampling. Two hundred ninety five (295) women were interviewed and 28 were excluded, as they never experienced a pregnancy. Socio-demographic characteristics and knowledge about antenatal care were compared on the basis of having received and not having received antenatal care, utilizing bivariate and multivariate analysis.
Results: Multivariate logistic regression analysis showed that higher income women were twice likely to use antenatal care services (AOR=2.11 95% Cl 1.14-3.89) than those of lower income. Women receiving antenatal care were more knowledgeable about the importance of dietary protein (AOR=1 .97 95% Cl 1.16-3.33), intake of green leafy vegetables for the prevention of anemia (AOR=2.34 95% Cl 1.33-4.11), and reporting danger signs (AOR=2.25 95% Cl 1.07-4.74).
Conclusion: Women of reproductive age need to recognize the importance of receiving antenatal care in the community. Uplifting the socio-economic status and literacy rate of women is required to provide community based education. There is a potential need to increase nutrition education, highlighting the importance of iron supplementation, appropriate food during pregnancy recognition of signs and symptoms and danger signs and pregnancy (JPMA 53:47;2003).

Introduction

Antenatal care is an important determinant of high maternal mortality rate and one of the basic components of maternal care on which the life of mothers and babies depend.[1] Systematic antenatal care was first introduced early in the 20th century in Europe and North America and is now almost universal in the developed world.[2]
Antenatal care can be defined in various ways. WHO defines antenatal care as a dichotomous variable, having had one or more visits to a trained person during the pregnancy.[3] It includes routine follow up provided to all pregnant women at primary care level from screening to intensive life support during pregnancy and up to delivery.[4-6] The most common indicators of health and reproductive behavior include utilization rates of antenatal care, age when women give birth, pregnancy order and birth spacing. Health

status is also influenced by distant factors; for example anemia can be due to lack of money to buy adequate and good quality food (SES) or to poor eating habits (health behavior). These factors can be modified if the services can be made accessible and affordable to women and their families.[1.7]

A number of studies have identified lack of antenatal care as a risk factor for maternal mortality.[8-13] Certain other studies have observed an association between antenatal screening for poor obstetric history combined with proper referral, and lower risk for maternal death.[11-15] Some of these studies have methodological weaknesses mostly related to not controlling for potential confounding factors, although. the effects were typically very pronounced. suggesting that an association is likely to exist.

Several studies conducted in developing countries on demographic and socio-cultural factors influencing use of maternal health care services, have shown that factors like maternal age, number of living children, education, place of residence, occupation, religion and ethnicity are significantly associated with use of antenatal care.[16-18] One of these studies have examined the relationship between antenatal care utilization and pregnancy outcome.16 Randomized controlled trials that assign women to different protocols have found little difference between intervention and control groups9.[19], but these studies do not include populations of women with little or no antenatal care.

The present study was conducted to assess the utilization pattern of antenatal care and to identify factors affecting the utilization of antenatal care among married women of reproductive age at Rehri Goth, an urban squatter settlement of Karachi. The findings will be helpful in policy making and in designing appropriate programs and services for the urban population of Karachi. The reduction of maternal mortality requires early detection of high risk pregnancies through appropriate antenatal care at community level and the existence of a mechanism to ensure timely access to referral facilities.[20,22] This requires that women should have adequate knowledge about pregnancy related care and should be able to recognize the importance of antenatal care and its utilization. A number of maternal deaths and serious morbidity have been reported in Rehri Goth in the past (Urban Health Project AKU). There is a related need to know factors, which affect the use of antenatal care so that these may be more emphasized in planning.

Methods

Study Design

Community based cross sectional survey.

Study Setting

Rehri Goth is one of the oldest squatter settlements of Karachi and is a Periurban community with an area of 13 square kilometers and total population of 11,000 residing in 16 blocks in 1667 households. The main occupation of the population is fishing. It is a remote area in terms of access to health care and, in the years 1996-1998, six maternal deaths due to pregnancy related causes were reported (AKU urban maternal health survey 1999). The mother tongue of most people in Rehri Goth is Sindhi.

Selection criteria of subjects

Inclusion Criteria: Married women of reproductive age (15- 49 years) residents of Rehri Goth, from households selected in sampling.

Exclusion Criteria: Unmarried women and women below 15 years and above 49 years of

age, not residents of Rehri Goth.

Questionnaire

For data collection a structured questionnaire was designed first in the English language, comprised of different sections such as socioeconomic conditions, demographic information, knowledge of women about antenatal care. This includes knowledge about signs and symptoms of pregnancy, diet in pregnancy, preventing anemia and danger signs in pregnancy. The questionnaire and manual of instruction were translated to Urdu and Sindhi languages and then back translated to English to identify any change in meaning or phrasing. The questionnaire was pre-tested in a similar setting (Ibrahim Hydri) and amendments made where required.

Data collection

Data collection was carried out from 4th May to 14 June 1999.

Training of Interviewers

Twelve female interviewers and two field supervisors
of higher secondary education level were hired. They were trained for three days focusing on skills of conducting the interviews, importance of informed consent and how to introduce themselves to respondents.

Pre-testing of the questionnaire

Pre-testing was conducted in another similar setting. For pre-testing, questionnaires were administered to fifteen percent of the total sample size (44 questionnaires). The questionnaire and manual of instructions were revised after pre-testing and necessary amendments were made.

Household Survey

A community based cross sectional survey was conducted through systematic sampling with a random start (1st house selected randomly by draw) in all the sixteen sectors. From each sector every third household was visited, one married woman of reproductive age group who came in first contact and ever had a pregnancy was interviewed after giving consent.

Data were entered using the Epi-info 6 statistical package. SPSS (version 10) was utilized to analyze the data. For categorical variable we used the Chi- square test for bivariate analysis of cross-tabulation to measure crude odds ratios with 95 percent confidence intervals to identify associations with antenatal care and other variables.

Multivariate logistic regression was carried out to evaluate the combined effect of multiple factors affecting the utilization of antenatal care, adjusting for confounding variables, to assess the knowledge about antenatal care among women who received and did not receive antenatal care. The approach was to seek for the most parsimonious model, which is biologically meaningful. The criterion for inclusion of factors in the multivariate analysis was to offer all variables with a p-value of <0.25, along with variables of known biological significance.23 All variables that met these criteria were used for building the final model. We started with the variable found most significant in the univariate analysis, subsequently adding the next significant variable one after the other. Variables found statistically non-significant (>0.05), biologically not meaningful and not confounding the relationship of other independent variables with the outcome, were removed from the model. All variables were categorical in nature or grouped, and for each variable, one category was selected as the reference category. Results were presented in terms of odds ratios which express the magnitude of the effect of each

category on the outcome, relative to the reference category.

Variables

The list of variables include socio-demographic, pattern of health care utilization of women, knowledge about sign and
symptom of pregnancy, change in quantity of food taken during pregnancy, diet during pregnancy, preventing anemia in pregnancy, intake of iron tablets during most recent pregnancy, tetanus toxoid vaccination in pregnancy and danger sign in pregnancy. Information based on objectives was obtained through a dichotomous dependent variable (antenatal care received during last pregnancy once by Dai, midwife, LHV, nurse, doctor).

Results

We approached 323 married women of reproductive age grOup (15-49 years) resident of Rehri Goth, from households selected for interview. Twenty-eight women were excluded, as they never had a pregnancy. Wc interviewed the remaining 295 women regarding demographic, socioeconomic characteristics, pattern of health care utilization and knowledge about antenata! care. Of these 295 women, 152 (51%) received antenatal care in their most recent pregnancy while 143 (49%) did not receive antenatal care. Among those who did not receive antenatal care, 28% reported that they did not know it was required, 10% percent were not advised by anyone, 8% said that they did not have permission from home, 10% found the facility to be far away, 7% reported that transport was not available and 37% did not have any reason. Sixty women were found pregnant in the sample and among these, 37 were receiving antenatal care and 23 were not receiving antenatal care.

The mean age of women in the sample was 29 years in both groups. Twenty five percent of women and 39% of husbands were literate, literacy being defined as the ability to read and write simple words. Eighty five percent of women were housewives, and 15% of women were employed outside the house. Among those employed. 12% were involved in fishing related work while 2% were doing private jobs. The total monthly income of the household was assessed in rupees earned by members of the household as shown in Table 1.

Table 1. Distribution of married women by socio-demographic characteristics (n=295).

	No.	Percent
Age of the women (in years)		
15-19	25	8
20-24	26	8.7
25-34	157	52.6
35 and above	87	30.3
Education of women		
Illiterate	221	75
Literate	74	25
Occupation of women		
Housewives	252	85
Employed	43	15
Education of husbands		
Illiterate	179	61
Literate	116	39
Income of the household (in rupees)		
<4500	202	68.5
>4500	63	21.4
Missing value	30	10.1
Iron supplements intake	146	49.4
Tetanus vaccination received	148	50.16

The distribution of study subjects regarding their intake of iron supplements and tetanus immunization revealed that 49% were on oral iron supplementation during their recent pregnancy. Only half (50.16%) had tetanus immunization in pregnancy.
Among 152 women who received ante natal care. 33% had it from an untrained care provider (specifically a dai), 20.4% from midwife, 20.4% from a nurse, 19.1% from a doctor and 7% from Lady Health Visitor. The proportion of women seeking antenatal

care from a private care facility (57.9%) was much higher as compared to government care facilities (14.5%), while (27.6%) received care at home. Regarding first visit of antenatal care, 52% went for it in the first trimester, 28.3% in the second trimester and 13.2% in the third trimester. Only 18.4% women could go alone to a health care facility for antenatal checkup while 81.6% said that somebody accompanied them (Table 2).

Table 2. Pattern of utilizing antenatal care (n=152).

	No.	Percent
Care provider		
Dai	50	32.9
Midwife	31	20.4
Lady health visitor	11	7.2
Nurse	31	20.4
Doctor	29	19.1
Place		
Private	88	57.9
Government	22	14.5
Home	42	27.6
First visit for antenatal care		
1st trimester	79	52
2nd trimester	43	28.3
3rd trimester	20	13.2
Time not known	10	6.6
Person accompanied during antenatal care		
Somebody	124	82
Nobody	28	18

Socio-demographic characteristics of the two groups were compared. The study subjects

were divided in two groups on the basis of either receiving antenatal care or not. When the age, educational status of women, husbands education and income of households were compared between the two groups, the only characteristic demonstrating a statistically significant association with utilization of antenatal care was income.The odds of reporting high income were 1.75 times among the antenatal care group as compared to women not receiving antenatal care (CI 1 .00-3.13) (Table 3).

Table 3. Comparison between groups who received and did not receive antenatal care by socio-demographic factors.

Categories	Received ANC (n=152)	Did not receive ANC (n=143)	Odds ratio (95% CI)
Age (years)			
15-19	16	9	1.00
20-24	12	14	2.07 (0.59-7.48)
25-34	81	76	1.67 (0.67-4.25)
Education (women)			
Illiterate	110	111	0.76 (0.44-1.28)
Literate	42	32	
Education (husbands)			
Illiterate	92	87	0.96 (0.60-1.55)
Literate	60	55	
Household income (rupees)			
<4500	97	105	1.00
>4500	39	24	1.75 (1.00-3.13)

ANC = Ante natal care

Information about knowledge regarding pregnancy signs and symptoms was compared between the two groups. No association was observed with regard to reporting no menses as a sign of pregnancy (OR=l.28, 95% CI 0.81-2.03), nausea/vomiting (OR=l .28, 95% CI 0.77-2.13), abdominal enlargement (OR=l .72, 95% CI 0.85-3.49). Knowledge about danger signs and symptoms was compared, a significant association being observed with utilization of antenatal care in reporting fever, persistent vomiting, and severe abdominal pain by women seeking antenatal care as compared to the other group (Table 4).

Table 4. Comparison of antenatal care received and not received by knowledge about signs and symptoms and danger signs in pregnancy.

Sign and symptoms	Received ANC (n=152)	Not received ANC (n=143)	Odds ratio (95% CI)
Stopping of menses	87 (57.2%)	73 (51%)	1.28 (0.81-2.03)
Nausea/vomiting	112 (73.7%)	98 (68.5%)	1.28 (0.77-2.13)
Abdominal changes	24 (15.8%)	14 (9.8%)	1.72 (0.85-3.49)
Danger signs and symptoms			
Fever during pregnancy	32 (22.4%)	16 (11.7%)	2.11 (1.10-4.05)
Persistent vomiting	32 (22.4%)	16 (10.8%)	2.11 (1.10-4.05)
Severe abdominal pain	50 (35%)	31 (22.5%)	1.77 (1.05-2.98)

ANC = Ante natal care

Knowledge about quantity and type of diet was compared. The odds of reporting an increase in quantity of food during pregnancy is 1.6 times among the antenatal care group (CI 1.04-2.62). Knowledge about type of food included in the diet was compared and a significant association with utilization of antenatal care observed in reporting the inclusion of protein, vegetables and fruit in diet. However, there was no significant association observed in reporting milk in diet.

Knowledge about preventing anemia was compared:

intake of meat/ organ meat, green leafy vegetables in diet to prevent anemia was significantly associated with utilization of antenatal care (Table 5).

Table 5. Comparison of knowledge about diet, type of food added and preventing anemia in pregnancy between two groups.

Knowledge about diet/type of food added in diet	Received ANC (n=152)	Not received ANC (n=143)	Odds ratio (95% CI)
Increase in quantity of food	85 (57.8%)	62 (42.2%)	1.66 (1.02-2.70)
Protein	103 (59.9%)	69 (40.1%)	2.25 (1.01-2.79)
Fruit	65 (59.6%)	44 (40.4%)	1.68 (1.01-2.79)
Vegetables	110 (72.4%)	81 (56.8%)	2.0 (1.23-3.26)
Milk	91 (59.9%)	73 (49.0%)	1.43 0.90-2.26)
Increase intake of meat/organ meat in preventing anemia	44 (28.9%)	27 (18.9%)	1.75 (1.01-3.02)
Increase in green leafy vegetables in preventing anemia	68 (44.7%)	35 (24.5%)	2.49 (1.51-4.10)

ANC = Ante natal care

The utilization of antenatal care has been associated with a number of factors. In order to assess the contribution of these factors to overall variance, while controlling for confounding, multiple logistic regression analysis was conducted. In the final multivariate model, income and knowledge were found to be significant factors affecting the utilization of antenatal care. After adjusting for the effect of other variables in the model, women of higher income were two times more likely to use antenatal care

services as compared to the lower income group (OR= 2.11,95% CI 1.14-3.89), other significant association were inclusion of protein in diet (OR=l.97, 95% CI 1.16-3.33), intake of green leafy vegetables for prevention of anemia (OR=2.34, 95% CI 1.33-4.11), reporting persistent vomiting as danger sign (OR=2.25, 95% CI 1.07-4.74 (Table 6).

Table 6. Multivariate analysis for variables associated with receiving antenatal care.

Variables	Adjusted odds ratio	95% CI
Household income (Rupees)		
<4500	1.00	-
>4500	2.11	(1.14-3.89)
Knowledge		
Protein included in diet	1.97	(1.16-3.33)
Increase intake of green leafy vegetables in preventing anemia	2.34	(1.33-4.11)
Persistent vomiting as a danger sign of vomiting	2.25	(1.07-4.74)

Discussion

In Pakistan, health services are poor in general, but they are particularly deficient for maternal health leading to adverse outcomes for both women and newborns. Antenatal care is named as one of the four pillars of the safe motherhood initiative: although its relative contribution to maternal health care has been under debate, its importance cannot be denied. Less than one-third of pregnant women receives antenatal care, with a large urban and rural difference: 17% of pregnant women in rural areas receive antenatal care, while 71 % of women in major cities are able to take advantage of service.[24]

Our findings showed that about half the women

sampled received antenatal care while the remainder did not. No association was observed when age categories were compared between the two groups. A review of studies reported that age serves as a proxy for women's accumulated knowledge of health care utilization: older women are more likely to use maternal health care services than younger women, with effects being observed at particular levels of education and birth order of children.[5,25-27]

In Pakistan, the adult literacy rate for males is 56.5% and for female is 32.6%. These

rates are quite low when compared internationally.[28,29] Only 16% of girls are enrolled for higher secondary school, with only 7 percent enrolled in rural areas (compared with 33% of boys). Education is significantly associated with utilization of maternal health services: 22% of mothers with no education receive antenatal care while 85% of mothers with at least secondary education do so. A review of studies reported that education of women is positively associated with utilization of antenatal care.[25-27] There are a number of explanations for why education is a key determinant of demand. Education is likely to enhance female autonomy: women thereby develop greater confidence and capabilities to make decisions regarding their own health, as well as their children's health. It is likely that more educated women seek higher quality services and have greater ability to use health care inputs to produce better health.

In our study, no association was observed when educational status was compared between the two groups because only 74 women (25%) were literate. Here it is worth mentioning that even in the literate category, all those included had no years of schooling and could just read and write simple words. This may explain why education did not show any association in our study, as it may be the quality of education, which increases the likelihood of using antenatal care services. Education was found significant as reported in other studies only when there were formal years of schooling.[25-27.30-34] No association was observed between working status of women and utilization of antenatal care which was consistent with the findings of other studies.[18,26,35,36]

Income of households and husband's education serve as indicators to assess socioeconomic status. In our study most husbands were illiterate and a high proportion of women belonged to a poor income group. After multivariate logistic regression analysis, income was found to be a significant factor for utilization of antenatal care, which is consistent with the findings of other studjes[17,31,34,37,38]

Thirty three percent of those who received antenatal care did so from untrained care providers specifically dais. These are illiterate women living in the community, practicing without training. In spite of the availability of trained assistance only 20% of deliveries were conducted by trained health care providers, one of the lowest rates in Asia (UNICEF 1997; NHSP1996; PDHS 1992).

According to World Bank Study, public and private expenditure on health in Pakistan represents 3.4% GDP while public expenditure alone accounts to 1 % of GDP, a low figure by international standards. It is remarakble that for a country at the economic level of development of Pakistan, private expenditure amounts to 60% of all health expenditure and provides services to 70% of population. A much higher proportion of women reported care received from private doctors (44%) according to the National Health Survey of Pakistan (NHSP1996). In the private health sector such services are expensive, while government health services for antenatal care are available at very subsidized rates. Pakistan has experienced only a modest economic growth and the per capita income is $500 and about one third of the population lives below poverty line.[37] Poverty negatively effects the utilization of health services. In our study sample, a very small proportion (145%) of women received antenatal care from government facilities, while a much higher proportion of women received care from private facilities, which is consistent with the findings of other studies.[25,30]

Women's lack of autonomy is a serious constraint to receiving needed care. Cultural restrictions on mobility are a significant barrier to women's access to maternal health

services. Most women did not have permission to move about freely, and most are forbidden to be alone when in public. According to a recent survey of women between the ages of 15 and 40 years in rural Punjab, only 28% can go unescorted to the local health center and only 12 percent can travel alone to the nearest village. Over two-thirds of the women interviewed required an escort to leave home.[39] In our study 18% of women reported that they can go alone to a health care facility for antenatal checkup, while 82% reported that they accompany a family member (e.g. mother in law, husband and mother).

The WHO mother baby package stated that during pregnancy, iron/folic acid is beneficial to the healthy growth of the fetus. In Pakistan more than 40 percent of women are anemic (NHSP 1996): this suggests that iron supplementation coverage is low. The aim is to achieve 100% coverage of iron supplementation for prevention of anemia, as this is one of the main causes of maternal mortality[7,24,40] Half of the women reported that they did not receive iron supplementation and had not received tetanus immunization. Pakistan is thus the third ranking country in the world for neonatal tetanus.

Malnutrition is a major problem among the poor in Pakistan.[41] It affects adult women more than men and contributes to a vicious cycle of poor growth and development from generation to generation. The reason is inadequate food intake because of poverty and lack of knowledge about what constitutes a balanced diet. Pregnant women receive 87% of the recommended calories and lactating women 74% (Pakistan, Federal Bureau of Statistics 1995). Protein intake for these women was around 85% of the recommended level. Malnourished mothers face potential complications in childbirth and a high likelihood of low birth weight babies. If those babies are girls, they will be predisposed to poor pregnancy outcomes when they reach childbearing age.

In our study, knowledge about quantity and type of food included in pregnant women's diet was found significantly associated with antenatal care utilization. The women receiving antenatal care were found to be more knowledgeable about the importance of mci-easing quantity of food and intake of protein, fruits and vegetables during pregnancy. Antenatal care counseling sessions provide knowledge about type of food and the importance of quantity of food during pregnancy.[42]

Knowledge about danger signs in pregnancy was also compared between the two groups. Reporting of danger signs like persistent vomiting, fever and severe abdominal pain was found to be significantly associated with utilization of antenatal care. Through proper knowledge of danger signs in pregnancy, lives could be saved by emergency obstetric care. Routine antenatal care may raise awareness about the need for care at delivery, and also gives women and their families a familiarity with health facilities that enables them seek help more efficiently during a crisis.[42,44]

Emergency obstetric care comprises the elements of care that are most often needed for the management. of complications, such as ante partum hemorrhage, post partum hemorrhage, eclampsia, obstructed labor, sepsis and anemia. The technology for the management of these complications has been available for at least a decade, and could be utilized properly if complications were identified earlier through improving knowledge among women about danger signs and symptoms during pregnancy.[4,10,4]

Some of the limitations in our study need to be noted. Questions on antenatal care utilization referred to most recent pregnancy to minimize the recall bias. The median length of time between the most recent birth and interview was three years, with a

maximum of 37 months; in 80% of cases, this birth had taken place within 5 years previous to the interview. As there are some instances in which the time period from recent delivery to interview was prolonged, they may be subject to recall bias. Although interviews were conducted in the local language, there is a possibility of misinterpretation in back-translation. Finally, for any risk factor to be considered as a true determinant of association as distinct from the risk marker[45], it is necessary to establish a cause and effect relationship between the factor and the outcome. Owing to the design of the study, being cross-sectional, one has to be careful about inferring causal or etiological implications.[46]

Conclusion

Overall knowledge about antenatal care was found to be better among women who had utilized antenatal care as compared to women who did not receive antenatal care. Women of reproductive age (15-49 years) need to recognize the importance of antenatal care and to receive such care in the community. Underlying this need , there is also a need to uplift the socioeconomic status and literacy level of women through community based education. In particular, there is need to increase nutrition education, highlighting the importance of iron supplementation, appropriate food during pregnancy and recognition of sign and symptoms and danger signs in pregnancy.
The study finding suggests that there is a need to increase tetanus immunization coverage of mothers as a part of prenatal care.There is also a need to increase tetanus immunization coverage of mothers as a part of prenatal care. There is also a need to evalaute the services provided by. government health facilities and to find out why women are not utilizing government health services, even though these services are available at subsidized rate.

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