



Socioeconomic inequalities in use of delivery care services in India

Abdul Salam, S A Siddiqui

Department of Community Medicine, Al-Ameen Medical College, Bijapur 586108

OBJECTIVE(S) : To quantify the socioeconomic gap in relation to availing of maternal health care services during pregnancy and delivery.

METHOD(S) : The data from National Family Health Survey (NFHS) – 2 published in 2000 was used. The components of reproductive health services and socioeconomic inequalities were studied. Statistical analyses were done to test the significance of results, and χ^2 test, Odds Ratio and Confidence Interval worked out.

RESULTS : Significant differences existed in availing of delivery care services among various segments of the population. Women residing in rural areas were less likely than urban women to use the health care services ($P < 0.001$). Both economic and educational status of women were positively associated with use of medical facilities ($P < 0.001$). Christian and Sikh women utilized the reproductive health services far better than Hindu and Muslim women ($P < 0.001$).

CONCLUSION(S) : There is a positive association between socioeconomic status of women and the use of maternal health care services. Those women who were better educated, economically well off and resided in urban areas availed the delivery care services to the maximum. Poor women cannot afford the cost of health care services.

Key words : socioeconomic condition, reproductive health services

Introduction

India is the second largest populous country in the world, with a population of more than one billion in 2001. Socio-economic, demographic and health indicators are showing a very poor condition of the general population. It has been observed that women of lower socioeconomic status often do not avail the existing reproductive health care services, particularly delivery care services. Both socioeconomic and demographic factors, however, have been shown to have a particularly great influence on use of health care services¹⁻⁷. Higher education levels influence the use of health services in several ways such as antenatal checkup, institutional deliveries, consulting the doctors, contraceptive use and sexual health care^{2,7}. In many South Asian cultures the use of preventive health services like routine antenatal care is a alien concept because such services are perceived to be existing solely for curative purposes^{8,9}. In an attempt to

improve national health indicators, the Indian government established the Reproductive and Child Health (RCH) Programme in 1997. The main focus of the program is on preventive services, providing essential obstetric services for all, and detecting and treating pregnancy complications early. The program is operated through a network of first referral units located at subdistrict health facilities. The Indian government has achieved greater success in encouraging the use of the delivery care services, although the maximum number of deliveries are taking place at home irrespective of socioeconomic status.

The aim of this study was to quantify the socioeconomic gap in relation to utilization of health care services during pregnancy and at the time of delivery. We expect that the lower socioeconomic group women make less use of maternal health care services. The wide variation between lower and higher socioeconomic strata women appears when utilization of related health care services are taken into account.

Methods

The analysis presented here is based on the data collected

Paper received on 06/12/2004 ; accepted on 05/09/2005

Correspondence :

Dr. Abdul Salam

Department of Community Medicine

Al-Ameen Medical College, Bijapur - 586 108.

E-mail : asabdulsalam123@rediffmail.com

by the International Institute for Population Studies, Mumbai, in 1998-99 and National Family Health Survey (NHFS)-2 published in 2000. Thirty-two thousand and three hundred ninety-three births took place during the 3 years preceding the survey. Information had been obtained from mothers on their socioeconomic status and use of maternal health care services during pregnancy and at the time of delivery.

The determinants of reproductive health services were studied viz., whether the woman consulted a health professional (doctor, health worker, health check up at home), place of delivery (medical institution or at home), and attendance by a professional or a relative, friend or neighbor. The components of socioeconomic inequality were studied viz., place of residence, level of education, standard of living, religion and birth order. The economic and educational status and place of residence may be expected to be more important for a measure of utilization of maternal health care services.

The statistical analyses were done to test the significance of results by χ^2 test. Odd Ratios and Confidence Interval were worked out. The confidence interval for the odds ratio was calculated based on Taylor Series approach.

$$EXP \ln OR \pm Z_{1-\alpha/2} \sqrt{(1/a + 1/b + 1/c + 1/d)}$$

Results

Significant differences existed in availing of delivery care services among various segments of population in India as shown in Table 1. It is obvious that the place of residence makes a difference in use of existing health care services. Women residing in rural areas were less likely than those in urban areas to have received antenatal checkup (60.2% vs 86.4%), have delivered at home (74.3 % vs 33.9%) and have assistance by health professional (33.8% vs 73.6%). Both economic and educational status of women are positively associated with use of medical facilities. Educated women

Table 1. Percentage distribution of antenatal checkup, assistance during delivery, and place of delivery during the 3 years preceding the survey.

Background characteristics	Anti-natal checkup by professional		Delivery assisted by professional		Delivery at institution		Total births
	Yes	No	Yes	No	Yes	No	
Age of Birth							
< 20	70.3	31.7	41.9	58.1	33.0	67.0	7589
20 – 34	66.4	33.6	43.7	56.3	36.0	64.0	23469
35 – 49	45.1	54.9	28.0	72.0	21.6	78.4	1335
Birth order							
1	78.3	21.7	60.8	39.2	51.6	48.4	9365
2 – 3	70.0	30.0	43.0	57.0	34.9	65.1	14104
4 – 5	51.8	48.2	25.9	74.1	18.4	81.6	5644
6 -	38.0	62.0	18.3	81.7	13.3	86.9	3279
Residence							
Urban	86.4	13.6	73.6	26.4	66.1	33.9	7191
Rural	60.2	39.8	33.8	66.2	25.7	74.3	25202
Mother's education							
HSC	94.2	5.8	83.5	16.5	75.7	24.3	4574
MSC	86.5	13.5	67.3	32.7	56.1	43.9	2935
< MSC	80.7	19.3	53.5	46.5	44.3	55.7	5818
Illiterate	51.6	48.4	25.7	74.3	18.5	81.5	19061
Religion							
Hindu	65.5	34.5	42.0	58.0	33.0	67.0	25650
Muslim	63.6	36.4	39.5	60.5	32.5	67.5	5120
Christian	84.9	15.4	64.2	35.8	54.8	45.2	753
Sikh	75.1	24.9	68.7	31.3	52.7	47.3	450
Standard of living							
Low	54.9	45.1	25.8	74.2	19.7	80.3	11804
Medium	67.2	32.8	44.6	55.4	35.8	64.1	15080
High	87.6	12.4	75.7	24.3	65.4	34.6	5112
Total	76.0	34.0	42.6	57.4	33.6	66.4	32393

MSC – Middle school complete. HSC – High school complete.

are more likely than illiterate women to have utilized the maternal health services during their pregnancy and at the time of birth. Forty-five percent of poor women and 12% of rich women did not get antenatal checkup. 40.4% difference was found between poor and rich women who gave birth at home, and about three fourths and one third respectively had delivered their babies without professional assistance. Increasing age and birth order is negatively associated with use of maternal health care services. The odds ratio shows that Hindu and Muslim women are almost alike in poorly availing the health care services. On the other hand, Christian and Sikh women maximally utilized the existing maternal health services.

Table 2 presents the results of odds ratios that the women did not get antenatal checkup along with their socioeconomic characteristics. The dependent variable here is the likelihood of not getting antenatal checkup during pregnancy. The results show that the maximum number of women get antenatal checkup at the time of first delivery than at the succeeding births. The results further confirm that women belonging to rural setup were four times less likely to go for antenatal checkup than urban women. The obvious reason might be that adequate medical facilities, both public and

private, are not available to or are not properly utilized by rural women. The educational and economic status of women was found significant in the use of health care services. Women who had middle school complete education were 2 ½ times, those who had less than middle school complete education were 4 times, and illiterate women were 15 times less likely to avail of antenatal checkup services than women who completed high school and above education. Women in families with middle and low standard of living were 1 ½ and 5 times more likely respectively to seek no antenatal checkup than those with high standard of living.

The odds ratios demonstrate the deterioration in availing of professional assistance during delivery among low socioeconomic status women (Table 3). Women having more than one birth were less likely to get professional assistance at the time of birth. The older mothers (age 35-49 years) were twice less likely to seek help of professionals at the time of birth than those ≤ 34 years of age. Women from rural setup were found to be less than 5 times more likely to give birth without professional help than urban women. Women with high school and above education were 15 times more likely to get professional

Table 2. Odds ratios that women gave birth without anti-natal check-up during the 3 years preceding the survey.

Backgroup characteristics	Odds Ratio	95% Confidence Interval	? ²	Total
Mother's age (years)				
< 20	1 (r)		df 2	2406
20 – 34	1.09	(1.03 – 1.15)	13.19	7886
35 – 49	2.62	(2.32 – 2.94)	(P>0.001)	733
Birth order				
1	1 (r)		df 3	2032
2 – 3	1.55	(1.46 – 1.65)	40.92)	3231
4 – 5	3.36	(2.86 – 3.29)	(P<0.001)	2720
6 +	5.89	(5.05 – 6.05)		2033
Residence				
Urban	1 (r)		df 1	978
Rural	4.20	(2.08 – 8.58)	(P < 0.001)	10030
Mother's education				
HSC	1 (r)		df 3	265
MSC	2.53	(0.91 – 7.03)	61.12	396
<MSC	3.88	(1.48 – 10.28)	(P < 0.001)	1123
Illiterate	15.23	(6.08 – 38.09)		9226
Religion				
Hindu	1 (r)		df 3	8849
Muslim	1.09	(0.62 – 1.93)	14.87	1864
Christian	0.35	(0.18 – 1.41)	(P < 0.001)	116
Sikh	0.63	(0.31 – 1.28)		112
Standard of living				
High	1 (r)		df 2	634
Medium	1.68	(2.80 – 9.48)	25.99	4946
Low	4.80	(2.86 – 11.82)	(P < 0.001)	5324

MSC – Middle school complete.

HSC = High school complete.

r - reference category.

df – degree of freedom.

Table 3. Odds ratios that women gave birth without professional assistance during the 3 years preceding the survey.

Background characteristics	Odds Ratio	95% Confidence Interval	χ^2	Total
Mother's age				
< 20	1 (r)		df 2	4409
20 – 34	0.93	(0.53 – 1.64)	5.44	13213
35 – 49	1.88	(1.04 – 3.39)	(P>0.001)	961
Birth order				
1	1 (r)		df 3	3671
2 – 3	2.06	(1.16 – 3.63)	46.20	8039
4 – 5	4.45	(2.41 – 8.17)	(P < 0.001)	4182
6 +	6.94	(3.63 – 13.03)		2679
Residence				
Urban	1 (r)		df 34.99	1898
Rural	5.45	(2.94 – 9.97)	(P < 0.001)	16684
Mother's education				
≥ HSC	1 (r)		df 3	755
MSC	2.50	(1.28 – 4.90)	73.64	959
< MSC	4.44	(2.05 – 9.58)	(P < 0.001)	2705
Illiterate	14.76	(6.49 – 33.44)		14162
Religion				
Hindu	1 (r)		df 3	14877
Muslim	1.10	(0.62 – 1.94)	27.10	3098
Christian	0.40	(0.23 – 1.41)	(P < 0.001)	270
Sikh	0.32	(0.18 – 0.57)		141
Standard of living				
High	1 (r)		df 2	1242
Medium	3.85	(2.09 – 7.09)	50.85	8354
Low	9.00	(4.66 – 17.12)	(P < 0.001)	8759

MSC – Middle school complete. HSC – High school complete. r – reference category. df – degree of freedom.

Table 4. Odds ratios that women's gave birth at home during the 3 years preceding the survey.

Background Characteristics	Odds Ratios	95% Confidence Interval	χ^2	Total
Mother's age				
< 20	1. (r)		df 2	5085
20 – 34	0.87	(0.48 – 1.57)	5.48	15020
35 – 49	1.88	(0.98 – 3.59)	(P>0.001)	1047
Birth order				
1	1 (r)		df 3	4533
2 – 3	2.01	(1.14 – 3.56)	33.81	9182
4 – 5	4.83	(3.89 – 5.93)	(P < 0.001)	4606
6 +	7.86	(3.78 – 16.28)		2849
Residence				
Urban	1 (r)		df 1	2438
Rural	5.81	(3.16 – 10.69)	18.48	18725
Mother's education				
≥ HSC	1 (r)		df 3	1111
MSC	2.44	(1.32 – 4.48)	68.53	1288
< MSC	6.01	(3.25 – 11.02)	(P < 0.001)	3241
Illiterate	14.24	(6.34 – 32.14)		15535
Religion				
Hindu	1 (r)		df 3	16929
Muslim	1.05	(0.58 – 1.89)	14.61	3456
Christian	0.40	(0.23 – 1.42)	(P < 0.001)	340
Sikh	0.54	(0.30 – 0.95)		237
Standard of living				
High	1 (r)		df 2	1769
Medium	3.40	(1.89 – 6.05)	46.18	9666
Low	8.04	(3.74 – 19.12)	(P < 0.001)	9479

MSC – Middle school complete. HSC – High school complete. r – reference category, df – degree of freedom.

assistance than illiterate women. Far more Christian and Sikh mothers delivered their babies with the help of professionals when compared to Hindu and Muslim mothers. Women from the lower economic strata were nine times less likely to seek trained assistance at the time of delivery than women from higher economic strata.

A statistically significant variation is observed in delivery of babies at home according to the respondent's socioeconomic characteristics as shown in Table 4. It has been observed from the data that in general, poor, uneducated, Hindu, and Muslim women were less likely to give birth at an institution (public or private Hospital) than rich, educated, Christian, and Sikh women. Older and younger women were more likely to have delivered their babies at home than middle aged women (20-34 years). Institutional deliveries sharply declined with increased parity. Women residing in rural areas were nearly six times more likely to give birth at home than urban women.

Discussion

In India the use of maternal health care services is directly or indirectly associated with women's socioeconomic status^{3,9,10}. Differences in utilization of delivery care services by pregnant women at the time of birth may be due to socioeconomic differences among women. The study data have demonstrated a positive association between socioeconomic status of women and use of maternal health care services. The results suggest that a maximum number of women from lower socioeconomic cadre preferred home deliveries without professional assistance and few of them got ante-natal checkup. In recent time, an impression is forming that women coming for delivery by doctors are likely to be advised cesarean delivery. The expenditure of cesarean operation is out of reach of lower and poor economic status families.

We have highlighted that those women who are better educated have maximally availed of delivery care services when compared to less educated and illiterate women. Significant differences have been observed according to women's education in consulting a health professional. Women with only primary and middle school education are less likely to see a professional in connection with their pregnancy and delivery. Attainment of education has a major influence on utilization of maternal health care services^{2,6,7,11}.

In terms of delivery assistance, antenatal checkup and place of delivery, there appears to be a big gap according to the women's standards of living. Women from poorer sections of the population are less likely to avail of maternal health care services than rich women. The reason might be that the cost of delivery care at private or public medical facilities

is high. Poor families do not find themselves in a position to be able to bear the cost of delivery care service. Even if they wish to avail the public sector medical facilities, they have to bear the cost of medicines and are expected to give gift in kind or cash to the attending doctors and other paramedical staff. Besides most of the women are not economically independent. The economic status of the family such as household income, occupational status, and cost of medical care has often been shown to be the barriers for use of delivery care services^{4,9,12}. It is not surprising that a maximum number of women in rural areas gave birth at home without professional help and antenatal checkup. The existing modern medical facilities in rural setup are much less, very far off from the remote villages, and are neither properly functioning nor providing adequate maternal health care services during emergency. Urban residence has proved to be a strong predictor of women's likelihood of using maternal health care services¹². Surprisingly, Hindu and Muslims women are alike in not availing of delivery care services properly.

Conclusion

Socioeconomic status, education, urban residence, age, parity and religion are the determinants of availing of delivery care services.

References :

1. Obermeyer CM, Potter JE. Maternal health care utilization in Jordan: a study of patterns and determinants. *Stud Fam Plann* 1991;22:177-87.
2. Obermeyer CM. Culture, maternal health care, and women's status : a comparison of Morocco and Tunisia. *Stud Fam Plann* 1993;24:354-65.
3. Bhatia J, Cleland J. Determinant of material care in a region of South Asia. *Health Transition Review* 1995;5:127-42.
4. Kavitha N, Audinarayana N. Utilization and determinants of selected MCH care services in rural areas of Tamil Nadu. *Health Popul Perspect Issues* 1997;20:112-25.
5. Nuwaha F, Amooti-kaguna B. Predictors of home deliveries in Rakai District, Uganda. *Afr J Reprod Health* 1993;3:79-86.
6. Magadi MK, Madise NJ, Rodrigues RN. Frequency and timing of antenatal care in Kenya: Explaining the variations between women of different communities. *Soc Sci Med* 2005;51:551-61.
7. Stephenson R, Tsui AO. Contextual influences on reproductive health service use in Uttar Pradesh, India. *Stud Fam Plann* 2002;33:309-20.
8. Goodburn EA, Gazi R, Chowdhury M. Beliefs and practices regarding delivery and postpartum maternal morbidity in rural Bangladesh. *Stud Fam Plann* 1995;26:22-32.
9. Poula G, Stephenson R. Understanding users' perspectives of barriers to maternal health care use in Maharashtra. *Indian J Biosocial Sciences* 2001;33:339-59.
10. Rani M, Bonu S. Rural Indian women's care-seeking behavior and choice of provider for gynecological symptoms. *Stud Fam Plann* 2003;34:173-85.
11. Falkingham J. Inequality and changes in women's use of maternal health care services in Tajikistan. *Stud Fam Plann* 2003;34:32-43.
12. Bloom SS, Lippeveld T, Wypij D. Does antenatal care make a difference to safe delivery? A study in urban Uttar Pradesh, India. *Health Policy Plann* 1999;14:38-48.