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Does Maternal Education Affect Maternal and Child Health Care Utilization?: A Community Based Study in a Urban Slum Area of Western India

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Abstract

In order to examine the relationship between maternal education and maternal and child mortality a survey was carried out in urban slum area of Surat city. The sample for this survey was designed to provide estimates on a large number of indicators on the situation of children and women living in the area where RCH services are provided by the Health Department of Surat Municipal Corporation. We included the mothers who had delivered in the past 1 year and their babies.Various variables with respect to maternal care and child care were investigated. A logistic regression was applied for variables found significantly associated with maternal education. This study showed that maternal education was independently associated with various aspects of maternal health care and child health care services. It is recommended that the local authorities should make effort to increase the maternal education for the betterment of the society.

Key Words: maternal education, maternal health seeking behavior, child survival and child care

Introduction

Maternal education would play a significant role if India wants to achieve Millennium Development Goals (MDG)[1] and to compete with developed country in context of health indices. There is a positive relationship between levels of maternal education and health service use[2] even in adverse family or socioeconomic situations[3]. Women's educational levels have been found to be associated with maternal death[4]. Large differences in child mortality by maternal education have been observed in most countries throughout the world [5-9].

Even though, generally positive association had been documented between maternal education and the health and survival of children by many studies[10],considerable diversity has been found between countries over the world. Along with considering women's education as an important force in its own right it is also a proxy for social determinant of health[11].

Furthermore, lack of education is highlighted as one of a number of stressors along with limited money and decision-making power affecting women during pregnancy and childbirth, creating vulnerability and increasing the likelihood of negative outcomes[12]. A deeper understanding calls for an investigation of how maternal education affects women's health-seeking behavior.

In an attempt to distinguish the possible benefits of women's education, the association between maternal education and maternal health seeking behavior and association between maternal education and child mortality and morbidity in urban area were studied. We examined the relationship between maternal education and factors known to reduce the risks of maternal and child mortality—utilization of antenatal and delivery care services, utilization of child immunization services, and treatment of childhood diseases.

Methodology

The survey was carried out in urban slum area of Surat City, located in the western part of India and the southern part of Gujarat.The MCH services are provided through Anganwadi center in the city. Each segment covered approximately 1000 population.

Sample design

The sample for this survey was designed to provide estimates on a large number of indicators on the situation of children and women living in the area where RCH services are provided by the Health Department of Surat Municipal Corporation (SMC). We included the mothers who had delivered in the past 1 year and their babies.

The 30 cluster sampling design was used for the study. The list of Anganwadi centres in the city was the main sampling domain which was used as sampling frame to draw samples of Anganwadis. Out of the total 1004 Anganwadi centers (AWC) 30 AWC were selected using systemic random sampling.

Information on immunization was obtained from immunization cards (locally called Mamta card) of children whose mothers had them and the remaining information was obtained from the mothers. All children who were at home were examined for a BCG scar. Mothers with education were operationally defined as those who received primary education or above it. Mothers with antenatal care were operationally as those mothers who had at least undergone 3 antenatal check-up during the last pregnancy. Mothers who received adequately tetanus toxoid (T.T.) injection were operationally defined as those who received 2 T.T. injection in the last pregnancy or had received a booster of tetanus toxoid in the past 3 years. Mother who had consumed adequately consumed iron supplements were operationally defined as those who consumed more than 90 iron and folic acid tablets during the last pregnancy, The families below poverty line were considered as those with the presence of below poverty line (BPL) card and the families with above poverty line (APL) card as those families living above the poverty line.

Training for the field investigator was conducted for one day which included lectures on interviewing techniques and the contents of the questionnaires, mock interviews between trainees to gain practice in asking questions. The data were collected by two teams; each was comprised of 2 field investigators and one supervisors over the period of 2 months. The data analysed using the Epi info 2002 software.

The variables with respect to maternal care were use of health services for antenatal care, getting adequate number of T.T. injections, consuming adequate amount of iron and folic acid tablets, use of family planning services, place of delivery (institutional or non-institutional) and occurrence of low birth weight baby . The variables with respect to child care were weighing of the baby at the time of birth, provision of prelacteal feed, giving bath on the day of birth, initiation of breast feeding within 1 hour of birth, provision of exclusive breast feeding up to 6 months, proper time of weaning in infants aged more than 6 months and complete immunization. The principal determinant investigated for maternal and child health and survival was maternal education.

A logistic regression (LR) was applied for the variables for maternal care found to be significantly associated with maternal education on univariate distribution. A logistic regression (LR) was applied for the variables for child care found to be significantly associated with maternal education on univariate distribution.

Results

The survey covered 6045 households in the areas catered by 30 Anganwadi Centres under Urban Health Centres of Surat Municipal Corporation (SMC). The number of women who delivered in last one year i.e. from 1st Jan 2011 to 31st Dec 2011 was 414 and out these 414 mothers we could get the complete information from 377 mothers. Remaining 37 eligible mother not included in the study, 31 mothers were not available at home when the survey team had visited while 4 mothers had left interview in between due to inevitable circumstances and 3 mother could not provide complete data.

In the study, 132 (35%) families with APL card, 108 (28.1%) families with BPL card while 139(36.9%) families did not have either APL/BPL card or had applied for the same were found.

All the mothers in the study i.e. 377 were classified in various groups according to their education level, mean number of children and number of alive children, number children dead in the last 1 year and total number of dead children (table 1).

Table 1: Education of mothers and their children

Education	Mothers	Mean number of children	Alive children (%)	Total Dead children (%)	No. of died children in past 1 year	Total
Illiterate	86	2.72	219(93.6)	15(6.4)	2	234(29.7%)
Primary(1 to 7)	136	1.93	248(94.6%)	14(5.4)	4	262
Secondary(8 to 10)	108	1.94	202(96.2)	8(3.8)	1	210(26.7%)
Higher Secondary(11	34	1.76	57(95.0)	3(5.0)	1	60(0.08%)
Graduate & above	13	1.54	19(95.0)	1(5.0)	1	20(0.02%)
Total	377	2.08	745(94.8)	41(5.2)	9	786

The three hundred seventy seven mothers in the study population had given birth to 786 children in their lifetime. The minimum age of mother was 18 years and maximum was 40 yrs. The median and mean age of the mothers at the time of the interview was 24 years. All the mothers in the study population were married. The mean number of children decreased as the level of education increased. The percentage of dead children was more in illiterate mothers and mothers who had education up to primary level than the mothers who had higher education.

Table 2: Use of health care services with respect to maternal literacy

Variables	Literate	Illiterate	OR(95% CI)	P value
Antenatal Check-up (with 3 or more visits) (N=377)				
Yes	271(93.13%)	59(68.60%)	6.20(3.26-11.80)	<0.05
No	20(6.87%)	27(31.40%)		
Adequate TT injection received(N=377)				
Yes	271(93.13%)	73(84.88%)	2.41(1.15-5.08)	0.017
No	20(6.87%)	13(15.12%)		
Adequate consumption of Iron and folic acid tablets(>90 tabs) (N=377)				
Yes	147(50.52%)	23(26.74%)	2.80(1.65-4.75)	<0.05
No	144(49.48%)	63(73.26%)		
Place of delivery (N=377)				
Institutional facility	265(91.06%)	59(68.60%)	4.66(2.54-8.56)	<0.05
Home	26(8.94%)	27(31.40%)		
Low birth weight < 2500gms (N=346)				
Yes	53(19.13%)	16(23.19%)	0.78(0.42-1.42)	0.450
No	224(80.87%)	53(76.81%)		
Currently using family planning service *(N=377)				
Yes	108(37.11%)	17(19.77%)	2.40(1.34-4.29)	0.003
No	183(62.89%)	69(80.23%)		

* Family planning services included temporary and permanent family planning services

As shown in table 2, a major portions of surveyed mothers (87.53%) had 3 or more ANC checkups, of which a significant number (82.12%) were literate [O.R. =6.20 (3.26-11.80), P value <0.05]. Adequate T.T. injections were received by large number (91.24 %) of mothers of which a significant portion (78.78%) were literate [O.R.= 2.41(1.15-5.08), P value<0.05]. Adequate consumption of iron and folic acid tablets (>90 tabs.) was statistically significant in literate mothers [O.R. = 2.80(1.65-4.75), P value< 0.05].

There was a statistically significant difference between the literate mothers and illiterate mothers with respect to having delivered at institutional facility [4.66(2.54-8.56), P value<0.05]. There was no significant difference in occurrence of low birth weight baby between mothers who had education and who did not. The current utilization of family planning services was significantly more in mother who had education [O.R. = 2.40 (1.34-4.29) P value<0.05].

Table 3: Maternal education and care of the infant

Variables	Education	No education	OR (95% CI)	P value
Baby weighted at birth(N=364)[@]				
Yes	277(98.23%)	69(84.15%)	10.43(3.59-30.26)	<0.05
No	5(1.77%)	13(15.85%)	1	
Baby not given bath on day of birth(N=361)[α]				
Yes	150(53.38%)	28(35.0%)	2.1265(1.27-3.56)	0.03
No	131(46.62%)	52(65.0%)	1	
Pre-lacteal feed not given(N=371)[β]				
Yes	189(65.63%)	39(47.0%)	2.15(1.31-3.53)	0.02
No	99(34.37%)	44(53.0%)	1	
Breast-feeding initiated within 1 hour (N=377)				
Yes	127(43.64%)	34(39.53%)	1.18(0.73-1.93)	0.498
No	164(56.36%)	52(60.47%)		
Exclusive breastfeeding up to 6 months (N=204) [#]				
Yes	59(35.75%)	13(33.33%)	1.11(0.53-2.33)	0.775
No	106(64.25%)	26(66.66%)		
Proper time of weaning in infants aged older than 6months (N=155)[$]				
Yes	44(36.98%)	16(44.44%)	0.73(0.34-1.56)	0.4201
No	75(63.02%)	20(55.56%)	1	
Immunization status(N=377)				
Full	188(64.60%)	46(53.50%)	1.59(0.98-2.58)	0.062
Partial / Unimmunized*	103(35.40%)	40(46.50%)	1	

@- Mothers who did not knew whether their baby was weighed or not were excluded.

α- Mothers who could not provide the information whether was baby given bath on the day of birth were excluded.

β- Mothers who could not provide information whether prelacteal feed was provided were excluded.

#- Mothers with infants aged less than 6 months were excluded

$- Mothers with infants aged more than 6 months and who knew the weaning time of their baby were only included.

*5 mothers with education had unimmunized kids and 9 mothers without education had unimmunized kids.

As shown in table 3, there was significant proportion of mothers who did not have education had not weighted the baby at birth. This can be justified by the fact that the odds ratio is greater than 1. A significant proportion of babies were given bath on the day of birth and given prelacteal feed by mothers who did not have education. This can be explained by the fact that the p value is less than 0.05.

While there was no significant difference in initiation of breastfeeding within 1 hour and providing exclusive breastfeeding between mothers who had education and who did not have education. There was no significant difference between mothers with education and non-education on the aspect of providing exclusive breast feeding. Also there is no significant difference in the initiation of weaning in infants aged more than 6 months between mothers who had education and who did not have education. Similarly there was no significant difference in the immunization status of infant between mothers who had education and who did not have education.

As shown in table 4, a logistic regression (LR) was applied for the variables for maternal care found to be significantly associated with maternal education on univariate distribution namely, antenatal checkups (3 or more), Adequate T.T. injections (2 injections or booster), adequate consumption of Iron folic acid tablets(>90 tablets), place of delivery and use of family planning services.

Table 4: Variable of maternal health care found significantly associated with maternal education when logistic regression was applied

Variable	Crude Odd's Ratio	Adjusted Odd's Ratio (AOR)	P-value*
Antenatal checkups (3 or more)	6.20 (3.26-11.80)	3.73 (1.80-7.75)	<0.01
Adequate TT injection received	2.41 (1.15-5.08)	0.89 (0.36-2.17)	0.791
Adequate consumption of Iron folic acid tablets(>90 tablets)	2.80 (1.65-4.75)	2.03 (1.14-3.62)	0.016
Preference for delivery at health facility	4.66 (2.54-8.56)	2.87 (1.47-5.63)	0.02
Current use of family planning services	2.40 (1.34-4.29)	2.04 (1.09-3.81)	0.026

*P-value- Calculated for Adjusted Odd's Ratio

As shown in table 5, a logistic regression (LR) was applied for the variables for child care found to be significantly associated with maternal education on univariate distribution namely, weighing the baby at the time of birth, giving bath to the baby on the day of birth and giving prelacteal feed.

Table 5: Variables of child care found significantly associated with maternal education when logistic regression was applied.

Variable	Crude Odd's Ratio	Adjusted Odd's Ratio (AOR)	P-value
weighing the baby on the day of birth	10.43 (3.59-30.26)	9.09(3.06- 26.98)	<0.05
Giving bath to the baby on the day of birth	2.13 (1.27-3.56)	0.61 (0.35-1.06)	0.084
providing prelacteal feed	2.15 (1.31-3.53)	1.83 (1.06-3.16)	0.029

*P-value- Calculated for Adjusted Odd's Ratio

Discussion

In this study the mean number of children were on the decrease in more educated women. This is consistent with other studies[9, 13, 14]. This may be due to the fact that women seeking higher education marry at a later age. This study showed that mothers with education had higher health care seeking behaviour than mothers without education in matters like seeking antenatal care and preference for institutional delivery. This similar to the finding in other studies [3,9]. This is because education provides rationality to ones thought. The educated mothers command respect from the healthcare provider and enables families to manipulate the health system better. According to a study[15], which did a comparative study of the influence of maternal education on maternal health indicators based on NFHS-III data, showed that there is a significant association between the maternal education and maternal health care services for birth.

The use of family planning services was also significantly more in women with education. This may be because the mothers with education know the importance of family planning and education empowers them with greater decision making autonomy.[16]

According to another study[17], secondary education emerges as the most consistent predictor of health services use showing higher likelihood of use of antenatal, intranatal and postnatal services.

The weighing the baby on the day of birth was significantly more in women with education. The baby was significantly not given bath on the day of birth and not given prelacteal feed by women with education. This shows that mothers with education are more efficient and concerned in newborn care. This finding is similar to the study[6,7,8,11,17].

Although there was no association between child morbidity and maternal education, there was a greater risk of children not completing immunization if their mothers had not been to school. These results differ from the results of the study conducted by P. Govindaswamy and B. M. Ramesh[15]. These results support earlier findings from an evaluation report[18] of the national immunization program conducted in six districts in Uganda where it was observed that mothers who had some education were twice as likely to have their children immunized as those without formal education. They are also congruent with conclusions of other studies done elsewhere[19].

Conclusion

This study showed that maternal education was independently associated with various aspects of maternal health care services like receiving antenatal checkup, adequate TT injection, adequate consumption of iron and folic acid tablets, place of delivery, current use of family planning service. In addition to this maternal education was also independently associated with various aspects of care of an infant like weighing the baby at birth, not giving bath on the day of birth and not giving

prelacteal feed. It is recommended that the local authorities should make effort to increase the maternal education for the betterment of the society.

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