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Title: Health Knowledge of Mother and Its association with Child Morbidity, Medical Care and Medical Care Expenditure in India

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Health Knowledge of Mother and Its association with Child Morbidity, Medical Care and Medical Care Expenditure in India

Abstract

In Indian context, this study is a first time effort to assess health knowledge of women and its association with prevalence of short-term morbidities, medical-care and medical-expenditure among children in age-group 0-59 months by using nationwide data (IHDS, 2005). The findings indicate that though, it's well accepted that there's a positive impact of education on health, still, immaculate health knowledge is required for mother to understand her child's health problems; otherwise misconception might lead to adverse health outcomes. Evidential insights from this study stipulate that though, socio-economic factors are important predictors of child-morbidities; there's a huge variation in the prevalence of child-morbidities within the socio-economic groups by health knowledge of their mothers. Similar pattern of results are also indicated for medical-care and related expenditure on child-morbidities. Findings suggest that a health knowledge index could be an important composite predictor of health standing of the population of a given country or community.

Keywords

Health knowledge, Child morbidities, Medical care, Medical care expenditure, Linkage

Introduction:

Health knowledge is a relatively new concept in health promotion research and a much broader term than health literacy. Rendering to WHO, "Health literacy implies the achievement of a level of knowledge, personal skills and confidence to take action to improve personal and community health by changing personal lifestyles and living conditions" (WHO, 1998). The 'US Healthy People 2010' also defines health literacy as "The capacity to obtain, to interpret and to understand basic health information and services and also the competence to use such information and services to enhance health" (USDHHS, 2010). On other hand, yet, there is no formal definition for health knowledge, but, for general denotation for health knowledge is 'know-how of diseases remedy and preventive methods by an individual'; which is developed

through experiences gathered by an individual during his or her course of life which makes them able to understand their health problems (Little, 2007).

General connotation of health promotion research is that education has ever been a most important determining factor of knowledge and it has a positive impact on health knowledge. Educated women are more expected to delay their marriage and childbirth, give better health care to their families, and send their children to school and contribute to overall economic growth (Filmer, 1999). Conventionally, a country achieving higher literacy level, more specifically achieving higher female literacy, can be considered as the country with higher level of health knowledge. However, it's not always imperative that only a literate person possess health knowledge; an illiterate person can also have some knowledge about health based on his/her experiences and exposure to outside world and media which may be useful in dealing with similar or other health problems in future. Moreover, the health knowledge is not directly learned in school, instead is learned by means of numeracy skills acquired in school and literacy. Schooling improves efficiency by growing health knowledge and thereby altering the choice of health inputs (Altindag *et al.*, 2010).

To illustrate the context of the study, developing countries have achieved a female literacy rate varying from 70% to 83% and also achieved an infant mortality rate of around 50 per 1000 live births (Save the Children, 2000). In 2001, India had the national average of literacy rate 65% and male and female literacy rates were 76% and 54% respectively (Office of Registrar General of India, 2001). In 2011, the national average of literacy rate ascended to 74%, male literacy rate of 82% which is much higher than female literacy rate (65%), indicating that considerable disparity exists between the male and female literacy rate (Office of Registrar General of India, 2011). India has also achieved IMR of 48 per thousand live births in the year 2010 depicts reduction of infant mortality during the last decade ; but also reflects that there is an impact of mother's education on children's health (Office of Registrar General of India, 2010).

Though, it is largely agreed on the fact that education promotes health knowledge, but it is difficult to say that education is equivalent to health knowledge. In the last decade researchers have identified the importance of health knowledge, the role it plays in an individual's ability to

figure out health and self-care information, and its relationship to health outcomes. However, to our knowledge, hardly there are not many studies in global context and hardly any documentation of theoretical constructions and evidential relationship in Indian context. Therefore, in the succeeding sections we have presented evidential literature from global context and constructed a conceptual framework for analyses of this study in accordance with Indian cultural context.

Impact of Women's Education vis-a-vis Health Knowledge on Child's Morbidity

Researchers have studied the impact of women's education on child morbidity prevalence, but still researchers are not indefinite on pathways, in which it influences health. Therefore, globally, in variety of context, different studies have documented different inferences. For instance, According to Schultz (1984) mother's education can influence child health in different ways:(1) Education may lead to a more efficient amalgamate of health goods used to produce better child health outcomes; (2) Better educated mothers may be more effective at producing better child health outcomes within the available health commodities; (3) Schooling can affect parents' preferences in systematic ways, for example, educated mothers tend to opt for fewer but healthier children; and (4) More schooling raise family incomes, either through higher wages or increased productivity in self-employment, which should improve child health status. Kickbusch (2001) also mentioned that general literacy of women is a key determinant of health because low literacy is often linked to poor socio-economic circumstances, and this in turn is associated with adverse effects on health of both women and children those are independent of other risk factors. A recently published statement from the WHO Commission on the Social Determinants of Health (SDH) identified that 'literacy' as having a 'crucial role' in determining inequities in health in both rich and poor countries' (WHO, 2007).

On other hand, studies have also demonstrated that education is crucial but not a sufficient condition to address the major health challenges facing by developing societies. Moreover, health-seeking behaviour is a function not only of the availability of health services and other sources of health care but also of the motivation and ability of individuals to seek medical treatment (Teerawichitchainan and Phillips, 2007). In turn, it was postulated that by improving people's access to health information and their ability to employ it effectively. This indicates that

health knowledge is critical to better health outcomes (Nutbeam, 1998). Furthermore, Glewwe (1999) pointed out that health knowledge appears to be the most important skill that mothers (indirectly) obtain from their schooling to prepare them for providing care for their children's health. Particularly, women's health knowledge has multiple impacts on their health requirements in terms of seeking health care services and willingness to pay on health care and efficient use of available health resources. Sometimes persons with inadequate health literacy sustain higher medical costs and use an incompetent mix of services (Howard *et al*, 2005).

Women's health knowledge, first, empowers them to act appropriately in innovative and changing health-related circumstances through the exercise of rational and progressive skills. Consequences of health knowledge include increased understanding of self-health, improved self-reported health status, their children's health problems shorter hospitalizations, and proper utilization of health care services and lower health care expenses (Kickbusch and Buse, 2000). Secondly, health knowledge mentally prepares them to take decisions timely and strengthens the health-care-seeking attitude of mothers, how they utilize available health resources in response to their children's illnesses. Evidence suggests that active health-care-seeking attitudes of mothers play a decisive role in children's wellbeing in developing countries (Saito *et al*., 1997).

On the contrary, Shewry *et al*. (1990) point out that attitude to healthy behaviour, rather than health knowledge, appears to be more associated with health risks. He received considerably varied responses from people from different socio-economic groups were some extent, explain the differences in levels of health knowledge and behaviour change. Nevertheless, it has been observed that within the constraints imposed by health care availability, family income, and social ties, families make choices about treatment for childhood illness based on: (a) the characteristics of the illness, (b) their beliefs about health, (c) previous experience, (d) advice received from family members and neighbours, (e) parental education, and (f) ethnicity and language (Goldman *et al*, 2002). Based on this background, we stated the rationale for this study and presented a conceptual framework to understand association between women's health knowledge and prevalence of short-term morbidities among their children.

Rationale:

Previous literatures point to the fact that women's health knowledge is a key determinant of child morbidities and related medical care. However, to our knowledge, across the globe, there have been only few efforts that link the health knowledge of mother with their child health. In India, virtually there is no attempt to examine mother's health knowledge and it's linkage with child health, therefore, there is a need to address this issue in Indian context. Similarly, assessing the levels and pattern of health knowledge among Indian women helps in population, health policies and strategies of the country. The following questions: 1) Is there any discrepancies in health knowledge among women by education and economic status? 2) How far childhood morbidity prevalence are minimised or controlled by health knowledge of mother? 3) Whether the level of women's health knowledge determines the decision making of what type of medical care and expenditure on medical care services are requisite for child morbidity, are need to be assessed.

This study in India is to measure the health knowledge of women (aged 15-49 years) and systematically relate it to prevalence of short-term morbidities among their children (aged 0-59 months) and health care utilisation. In particular, this study assesses women's health knowledge and how far having knowledge on health make differences in prevalence of child morbidities (short-term), related medical care and medical expenditure in India.

The objectives of this study are, first, measuring of women's 'health knowledge' by their background characteristics; second, to assess prevalence of short-term morbidities among children, related medical care and expenditure on medical care by health knowledge and background characteristics of mother.

Conceptual Framework:

Based on review of evidences about mother's health knowledge and child morbidities linkages in global context, a conceptual framework (Figure 1) is developed for greater understanding of the association between mother's health knowledge, and short-term morbidities among their children, related medical care and expenditure.

In accordance with Indian socioeconomic and cultural context, this framework shows the network of influence of socioeconomic determinants on mother's health knowledge. The influence of mother's health knowledge on child morbidities, medical care and medical care expenditure are also shown.

Since its origin, similar to other societies in the world, in Indian society, women have been assigned an important and decisive role not solely concerning their children's health but concerning health issues of their entire family. Consequently, women's health knowledge has become an important determining factor for medical treatment received and related medical care expenditure. Within family, women develop certain health beliefs regarding their family's health problems and adopt health care practices. A mother decides when her child needs food, what kind of nutrition she has to give, which type of medication is required by the child. She is the most appropriate person to understand her child's needs and health problems, how to heal it and what to do in taking care of them. Her knowledge about these aspects has definitely an effect on her child's health.

However, in India, overall health awareness among women is quite low. Besides, women's low level of knowledge, low level of autonomy in decision making and less self-reliability are fostered as the critical factors for poor child health outcomes in India. Moreover, these indicators considerably vary from rural to urban and across the socioeconomic groups, i.e. among caste, religion, education level and economic groups. We see similar theoretical framework, in this study, the level of health knowledge of women may vary due to differences in socio economic background characteristics.

Conceptual Framework Showing Effect of Mother's Health Knowledge on Their Children's Health, Medical Care and Medical Care Expenditure

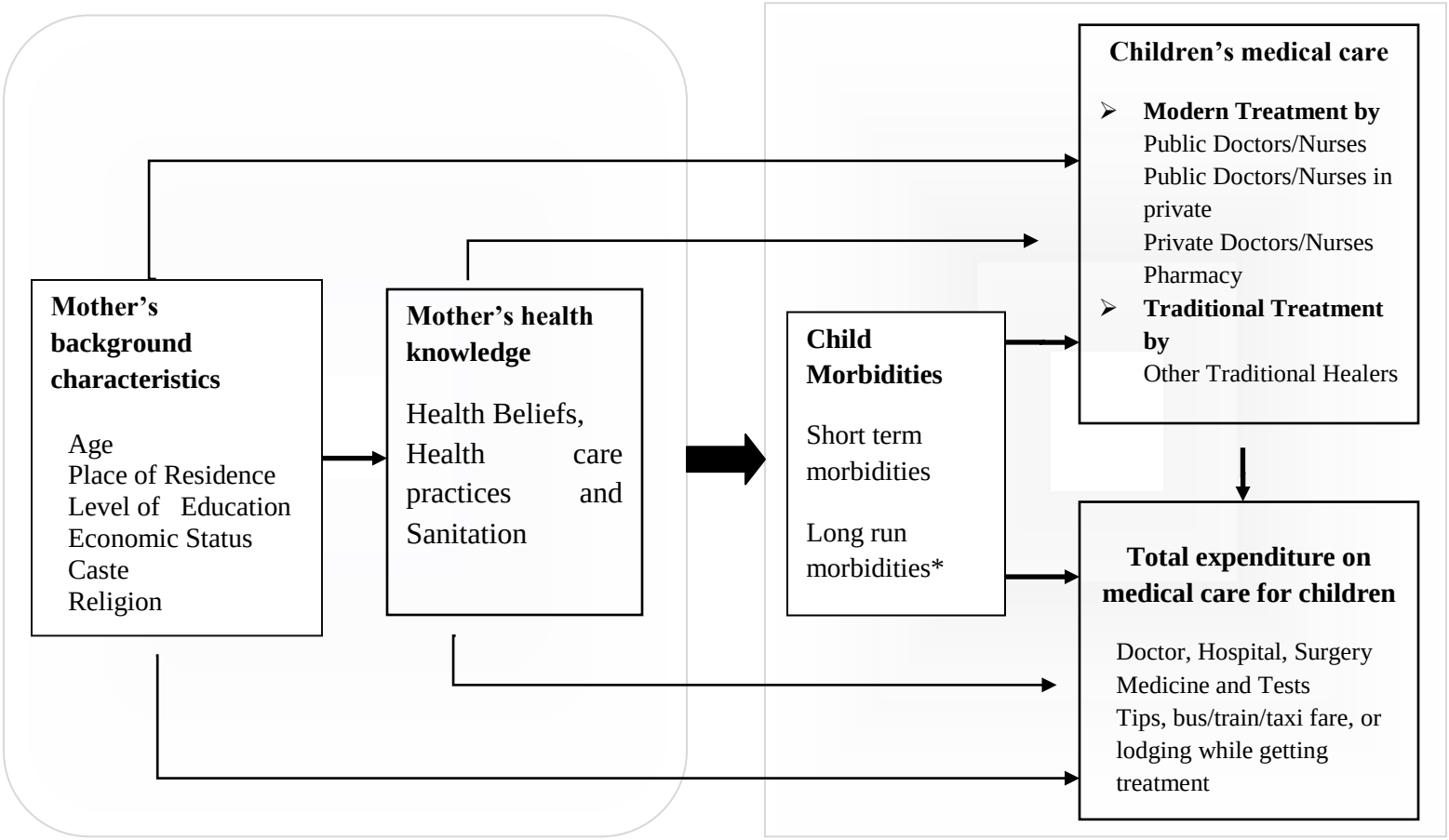

Figure 1

Note: *Long run morbidities of children are not considered in this study.

Data and Methods:

Data Source:

The India Human Development Survey 2005 (IHDS) has provided data related to women's health belief and practices. IHDS is the collaborative project of researchers from the University of Maryland and National Council of Applied Economic Research (NCAER), New Delhi. The IHDS was administered to a nationally representative sample of 41,554 households and a knowledgeable woman from each household residing in rural and urban areas was selected from 33 states and union territories of India with the exception of Andaman Nicobar and Lakshadweep. The sample extends to 384 out of 593 districts identified in 2001 census. It is a household survey, whose primary goal is to intensify understanding of human development in India. However, in the present study IHDS data has offered prospect to study consequences of mother's health knowledge on child morbidity. In the present study, information available on child morbidities and women's beliefs and practices towards health care is used.

Sample Design: Villages and urban blocks (comprising of 150-200 households) formed the primary sampling units (PSUs) from which the households were selected. The urban and rural PSUs were selected by means of a different sample design. In order to draw a random sample of urban households, all urban areas in a state were listed in the order of their size with number of blocks selected from each urban area allocated based on Probability Proportional to Sizes (PPS). Once the number of blocks for each urban area was determined, the enumeration blocks were drawn randomly with help from office of registrar general of India. From these Census Enumeration Blocks of about 150-200 households, a complete household listing were conducted and sample of 15 households was selected per block. For sampling purposes, some smaller states were combined with nearby larger states. The rural sample contains about half of the households that were interviewed initially by NCAER in 1993-94 in a survey titled Human Development Profile of India - HDPI (Shariff, 1999) and the other half of the samples were drawn from both districts surveyed in HDPI as well as from the districts situated in the states and union territories not covered in HDPI. The original HDPI was a random sample of 33,230 households, located in 16 major states, 195 districts and 1,765 villages. In states where the 1993-94 survey was

conducted and re-contact details were available, 13,593 households were randomly selected for re-interview in 2005.

Description of Study Population:

Table1 shows the distribution of sample proportion of women by background characteristics. By age, the share of sample in age group 15-24 years is shortly higher than the rest of the two groups. The share of sample of rural women to the total population is almost twice than the urban women. Other socioeconomic distribution of sample of women also more or less follows socioeconomic distribution of women in general population of India. Therefore, the results of the study are appropriate to generalize for India as whole.

Measurement of variables: Several variables relevant to this study have been constructed based information available in individual and household file.

a) *An index or scale of women's health knowledge* is constructed based on questions asked to women about their health believes and sanitation. There are seven questions related to 'Health Knowledge Index' are:

1. Do you wash your hands after defecating? (Yes/No)
2. When children have diarrhoea, do you think that they should be given less or more to drink than usual or it doesn't really matter? (Yes/No)
3. Do you think that the first thin milk that comes out after a baby is born is good for baby? (Yes/No)
4. Is smoke from a wood/dung burning traditional 'chulha' good or harmful for health? (Yes/No)
5. Do you store your drinking water in a vessel at home and does the vessel have a lid or cover? (Yes/No)
6. Is it good to drink 1-2 glasses of milk every day during pregnancy? (Yes/No)
7. During a normal week, do you ever treat or purify your drinking water by boiling or by filtering the water with a purchased filter or by using aqua guard or by adding chemicals? (Yes/No)

Principal Component Analysis (PCA) is used to generate 'health knowledge index'. 'Health knowledge index' categorised into i) no or low knowledge, ii) medium knowledge and iii) high knowledge.

b) *Any short-term morbidity in children* is defined as if child aged 0-59 months suffered with fever, diarrhoea and cold & cough during the last one month preceding the survey. Morbidity prevalence of a particular short-term disease was estimated by following formula:

$$= \frac{Number\ of\ reported\ cases\ of\ short\ term\ morbidities\ amongchildren\ aged\ 0-59\ months\ during\ the\ reference\ period}{Total\ child\ population\ aged\ 0-59\ months\ exposed\ to\ the\ risk\ of\ having\ the\ short\ term\ morbidities} * 100$$

c) *Treatment received in any modern medical care* is defined as if a child aged 0-59 months received treatment for their morbidities in any of modern medical care such as by public and private doctors and public and private nurses, pharmacy and the opposite is the children who taken treatment from others often from traditional healer or home remedies.

d) *Treatment outside the village* is defined as if child aged 0-59 months those received treatment in another village and neighbourhood, other town, and district town.

e) *The median expenditure on medical care* of short-term diseases is calculated by total cost for the treatment for outpatient as well as in-patient services in last 12 months including for doctor fee, for hospital surgery, for medicine and tests expenses; along with tips, bus/train/taxi fare, or lodging while getting treatment in rupees.

The analysis of the study is performed in two stages and predictors and outcome variables for these two stages are as follows:

Stage 1:

Predictor Variables: Background characteristics of women, such as age of mother, (demographic characteristic), place of residence, educational level of mother, caste, religion, wealth quintile of mother.

*Outcome Variables***:** Health knowledge of women aged 15-49 years.

Stage 2:

Predictor Variables: Health knowledge of women aged 15-49 years.

Outcome variables: Short-term morbidities among children of age group of 0 to 59 months, treatment received or not, modern treatment received outside the village, expenditure on medical care.

Statistical analyses:

All the statistical analysis in this study is performed by using SPSS 17 program. First, a 'health knowledge index' is constructed here to obtain composite level of women's health knowledge, i.e no or low knowledge, medium knowledge and high knowledge, using PCA. Respondents were required to rate each item (question) as "true" or "false". One mark is awarded (equal weight) to each correctly answered question. A higher score means a higher level of knowledge.

Second, multinomial logistic regression analysis is applied to estimate the differential relative risk of women's health knowledge by socioeconomic background characteristics. Third, to present results, in a clearer and broader perspective, consisting of many variables, 'Multiple Classification Analysis' (MCA) ,developed by Andrews *et al*. (1973) is used to estimate the adjusted percentages of women's health knowledge by their socioeconomic background characteristics. MCA provides efficient analysis of multiple variable data sets. The inter relations between variables is first shown in a single cross-tabulation, followed by preparation of the results of cross-tabulation with many other related variables at the same time.

The mathematical proof of MCA multinomial analysis as follows

$$Z_1 = Log\left(\frac{P_1}{P_3}\right) = a_1 + \sum b_{1j} * X_j$$

$$Z_2 = Log\left(\frac{P_2}{P_3}\right) = a_2 + \sum b_{2j} * X_j$$

And $P_1 + P_2 + P_3 = 1$

Where,

$a_{i\ i=1,2}$: constants

$b_{ij\ i=1,2;\ j=1,2\ldots.n}$: multinomial regression coefficient.

P_1=Estimated probability of reporting no or low health knowledge by women aged 15 to 49 years.

P_2=Estimated probability of reporting medium health knowledge by women aged 15 to 49 years.

P_3= Estimated probability of reporting High Health Knowledge by women aged 15 to 49 years is reference category.

For the sake of simplicity in the interpretation of results, multinomial logistic regression coefficients were converted into adjusted percentages. The procedure consists of following steps:

Step 1: By using regression coefficient and mean values of independent variables the probability was computed as:

$P_i = \frac{\exp(Z_i)}{\{1+\sum \exp(Z_i)\}}$, i=1, 2, 3 and $P_3 = 1- P_1 + P_2$ where Z was the estimated value of response variables for all categories of each variable.

Step 2: To obtain the percentage values, the probability P was multiplied by 100.

In this way, tables consisting of adjusted percentages were generated.

Lastly, bivariate and trivariate analyses are used to assess the relationship between health knowledge of mother and short-term morbidities among their children and related medical care. Bivariate relationships of health knowledge of women and child health outcomes are tested for statistical significance with Pearson's chi-square test. Additionally to accomplish the pattern of relationships, a binary logistic regression is used to estimate the adjusted effect of mother's health knowledge on short-term morbidities among their children and medical care after controlling for socioeconomic background characteristics. However, the ANOVA is used to test the statistical significance of health expenditure variation on short-term morbidities among children by mother's health knowledge.

Findings

The findings from this study are presented in three sections:

1) How health knowledge of women aged 15 to 49 years, as a dependent variable, influenced by their selected background characteristics, is provided in the first section. 2) How short-term morbidities, such as fever, cough and diarrhoea among children aged below five years, are influenced by their mother's health knowledge is discussed. 3) In the last section, the effect of women's health knowledge on medical care and expenditure on medical care were demonstrated.

Women's Health Knowledge by their background characteristics:

Results presented in table 2, show adjusted percentages of level of women's health knowledge, estimated from Multinomial logistic regression analysis and MCA conversion model by her background characteristics. The adjusted percentage reveals that greater proportion of women in age groups 15-49 years in urban area (38%) have health knowledge as compared to the women in rural area (19%). Results reveal that proportion of women with high knowledge increasing with the age of women; suggest that this is majorly the result of accumulation of health knowledge in terms of health experiences.

By education, results reveal that the proportion high health knowledge among highly educated women is three times higher than women who are not educated. This indicates that education has great positive effect on enhancement of health knowledge level. Women belong to poor economic status are having considerably lower health knowledge as compared to women in richer households; for instance, the proportion women with high health knowledge is only 19 % among women of poor compared to 46% of women among rich wealth quintile. By the religious categories, the highest percentage (63%) of women having higher health knowledge is observed for Christians than the Hindus (25%) and Muslims (35%). Overall, the socioeconomic indicators show considerable influence on women's health knowledge.

Influence of mother's health knowledge on short-term morbidities among children below five years:

This section demonstrates the sizeable variation in the prevalence of any short-term morbidity among children in age group 0-59 months by health knowledge of women and background characteristics. The results show an apparent indication of the effect of women's health knowledge on prevalence of short-term morbidities (fever, cough and diarrhoea). Within similar background characteristics, the prevalence rate of any short-term morbidity is inversely proportional to women's health knowledge. Higher the mother's health knowledge lower is the prevalence of short-term morbidities among their children. For instance, within rural areas, 29% children have suffered from any short-term morbidity if their mothers had no or very low health knowledge as compared to only 12% children suffered with any short-term morbidity if their mothers had high health knowledge category. Children of mothers with higher education and high level of health knowledge are less affected by short term morbidities as compared to children of uneducated mother with no or low level of health knowledge. Overall, the prevalence of short term morbidities is greater among the lower socio-economic groups; vary phenomenally by mother's health knowledge within the socio-economic groups (Table 3).

In accordance with the results presented in Table 3, the odds ratio of logistic regression analysis presented in table 5 further strengthen the evidence that mother's health knowledge acts as a key predictor of childhood morbidity. The result reveals that after controlling for other background characteristics, children whose mother having medium and high health knowledge are significantly less likely to have morbidity ($r=0.390$, $p<0.01$ & $r=.543$, $p<0.01$) than those children with mothers having no or low health knowledge ($r=1.000$, $p<0.01$). Overall, both trivariate and logistic regression analysis indicate that mother's health knowledge is an influential predictor of child morbidities than other background characteristics.

Influence of Mother's Health Knowledge on Modern Treatment Received and Medical Care Expenditure

Table 4 displays the percentage of children aged 0-59 months with type of treatment for short-term morbidities and expenditure on treatment by mother's health knowledge and background characteristics of their mothers. Results reveal that health knowledge of mother positively

influences the treatment of children for short-term morbidities. With the increase in the level of health knowledge of the mothers, the percentage of children treated in modern medical facility for short-term morbidity increase. However, besides the health knowledge, accessibility and affordability of treatment tend to play an important role in receiving medical care. Therefore, the available health facility within the village or neighbourhood is taken into consideration to understand this.

The assessments of treatment received for child morbidities within village or outside village by mother's health knowledge indicate that though there is not much difference in any treatment received. A considerable difference is observed in the modern treatment received outside the village or neighbourhood. A greater proportion (45%) of children with mothers of high health knowledge received modern treatment outside the village as compared to children of mothers with low health knowledge (41%). Overall results reveal that even among the same socioeconomic status, mother's health knowledge is a critical factor in determining the type of treatment received among children for their short-term morbidities.

This study also estimated the median expenditure on medical care to illustrate the differences in the willingness to pay for the treatment of child morbidities by mother's health knowledge and her background characteristics. The median expenditure on treatment of short-term morbidities for their children is lower among mothers with no or low health knowledge. The results of ANOVA test show significant relationship of median expenditure with health knowledge of women than other background characteristics (Table 5). The reasons may be unawareness, ignorance and reluctance in seeking treatment among low knowledge mothers. In contrast women with high knowledge women spend more on treatment and medicine to avoid unusual health problems.

Furthermore, no or lower health knowledge mothers are disadvantageous at many other aspects of medical care. According to Ruth Parker (2000), many studies have documented that low health literacy is associated with decreased medication and adherence. Poorer knowledge is often correlated with increased medication errors and non-adherence. The social stigma associated with illiteracy compounds the problems. People who have difficulty in reading are often ashamed and hide their illiteracy from health care providers, friends and even close family

members (Parikh *et al*, 1996). Disgrace and embarrassment may prevent mothers with poor health knowledge from seeking help when they do not understand medication labels and self-care instructions.

Corresponding to trivariate results of type of medical treatment for child morbidities, the results of logistic regression analysis presented in table 5 also confounds the same relationship. In case of treatment received and treatment received from outside the village of child morbidities, the odds ratio reflects the fact that, the likelihood of taking treatment is significantly high among the children of mothers with medium and high knowledge than those women having low or no knowledge. For instance, any modern treatment received for child morbidities among children with high health knowledge mothers is nearly two times higher ($r=1.97$, $p<0.05$) compared with children of mothers with no or low knowledge ($r=1.00$, $p<0.01$). Overall, the results indicate that women's health knowledge has an influential role with respect to modern medical care and spends on medical care for child morbidities in India.

Conclusions

Though, this study establishes that there is a positive impact of education on health, however sufficient and proper health knowledge is necessary to understand the health status and health related problems of individual. Health misconceptions in the absence of sufficient health knowledge may lead to the adverse health outcomes. Education enhances woman's knowledge, but earlier evidences in public health research indicate that among educated persons, improper conceptions of health exists (Shewry *et al*, 1990). So, educated women have healthy children and seek more medical care, this conclusion cannot be drawn so easily. However, the positive impact of health knowledge on health outcomes is universally appreciated and variation in the health status of women having similar health knowledge is only due to differences in background characteristics. This study, has tried to focus on these aspects, backed by statistical analysis and scientific interpretation of empirical evidences.

The results of the study unfold several major insights though socio-economic factors are greater predictors of prevalence of child morbidities. Huge variations exist in the prevalence of child morbidities within same socio-economic status by level of mother's health knowledge. These variations are greater among socio-economically advanced groups than their

disadvantaged counterparts. This outcome may be the result of better choice of type of medical care for socioeconomically advanced groups for medical treatment than lower socioeconomic groups.

Policy Implications

The important implication that emerges from the study, is that, besides medical care, spending on medical care is also dependent on the fact that, to what extent women rationally take decision on taking care of their children's health and willingness to pay for medical care, is guided by their health knowledge. Results also suggest that necessary health education for women can effectively help in improving health outcomes of their children. Moreover, India has mixed system of health care: a majority of curative treatment is through private medical practitioners whereas the government provides a substantive share of the preventive and promotive care (Parashar, 2005). Therefore, equipping women with appropriate health knowledge is crucial for wellbeing of their children. Social equity with respect to distribution of facilities to gain health knowledge, medical assistance, and income in terms of affordability are very essential to be established.

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Table 1: Percentage of Sample Population by Socio-Economic Characteristics, India, 2005

Background Characteristics	% of Sample	Sample Size (N)
Age Group of Mother		
15-24	36.61	15212
25-34	32.03	13309
35-49	31.36	13033
Place of Residence		
Rural	63.63	26439
Urban	36.37	15115
Education of Mother		
No Education	35.07	14575
Primary	14.61	6073
Upper Primary & Secondary	35.66	14819
Higher Education	14.65	6087
Wealth Index		
Poor	29.14	12108
Middle	21.55	8956
Rich	49.31	20490
Caste		
Schedule Castes and Scheduled Tribes	27.06	11244
Other Backward Classes	39.66	16482
General	33.28	13828
Religion		
Hindu	80.41	33414
Muslim	12.39	5147
Christian	2.61	1085
Others	4.59	1908
Total	100.00	41554
Sex of children		
Male	51.95	10124
Female	48.05	9364
Total	100.00	19488

Table 2: Women's Health Knowledge by Background Characteristics, India, 2005

Background Characteristics	Adjusted Percentage of Health Knowledge			Sample of Women (N)
	No knowledge Or low knowledge	Medium Knowledge	High Knowledge	
Age Group				
15-24®	45.46	31.37	23.18	15212
25-34	45.79***	30.54***	23.67	13309
35-49	43.08***	30.51***	26.40	13033
Place of Residence				
Rural®	52.91	28.01	19.09	26439
Urban	29.65***	32.04***	38.31	15115
Education				
No Education®	52.70	30.49	16.81	14575
Primary	44.55***	31.69***	23.76	6073
Upper Primary & Secondary	39.38***	29.87***	30.75	14819
Higher Education	20.21***	28.24***	51.54	6087
Wealth Index				
Poor®	49.97	30.74	19.29	12108
Middle	39.41***	29.49***	31.10	8956
Rich	23.13***	30.64***	46.22	20490
Caste				
Schedule Castes ® and Scheduled Tribes	47.75	31.09	21.16	11244
Other Backward Classes	36.76***	28.60***	34.64	16482
General	33.68***	26.01**	38.32	13828
Religion				
Hindu®	38.45	30.75	24.96	33414
Muslim	40.62***	24.30***	35.08	5147
Christian	21.23***	15.64***	63.13	1085
Others	44.29***	30.75***	24.96	1908
Total				41554

Note: ***p<0.01; **p<0.05; *p<0.10,

Reference categories are ® and High Knowledge.

Alpha test is used to test internal consistency of 7 variables used in computing health knowledge index and the shows high consistency with 0.83 of alpha coefficient.

Table 3: Prevalence (per hundred) of Short-Term Morbidities Among Children in Age Groups 0-59 Months by Mother's Health Knowledge, India, 2005

Background Characteristics	Health Knowledge			Average	Sample of Children (N)
	No knowledge or low knowledge	Medium Knowledge	High Knowledge		
Sex of the Child					
Male	29.8	15.9	11.2	19.0	10124
Female	25.1	17.1	12.1	18.1	9364
Place of Residence					
Rural	29.2	15.6	12.4	19.1	13654
Urban	22.2	18.2	10.6	17.0	5834
Mother's Education					
No Education	34.6	16.5	17.8	23.0	8191
Primary Education	25.7	15.3	14.4	18.5	2785
Upper Primary and Secondary	24.3	15.0	8.1	15.8	5148
Higher Education	27.6	15.3	11.0	18.0	1895
Wealth Index					
Poor	27.8	16.7	11.5	18.7	6680
Middle	29.8	15.9	12.1	19.3	3876
Rich	25.8	16.3	11.4	17.8	8574
Caste					
Schedule Castes and Scheduled Tribes	29.1	17.35	11.7	19.4	6009
Other Backward Classes	31.8	23.1	22.7	25.9	8048
General	27.1	15.4	11.7	18.1	5431
Religion					
Hindu	28.6	15.5	11.1	18.4	15322
Muslim	25.5	23.5	14.4	21.1	2933
Christian	0.0	10.0	12.3	7.4	411
Others	20.2	13.0	9.6	14.3	822
Total	28.1	15.5	12.8	18.8	19488

Note: The IHDS reported prevalence rates for a 30 days period for children under five are 24.5, 21.4 and 9.4 percent for fever, cough and diarrhoea respectively.

Table 4: Influence of Health Knowledge on Modern Treatment Received and Medical Care Expenditure, India, 2005

Background Characteristics	Treatment received			Modern Treatment Received (outside the village)			Median Expenditure on Medical Care (in Rupees)		
	No knowledge or low knowledge	Medium Knowledge	High Knowledge	No knowledge or low knowledge	Medium Knowledge	High Knowledge	No knowledge or low knowledge	Medium Knowledge	High Knowledge
Sex of child									
Male	96.1	93.7	97.9	42.9	44.2	44.7	140	125	176
Female	96.1	93.4	96.8	39.2	46.0	39.9	120	100	150
Place of Residence									
Rural	96.2	92.5	96.9	43.5	53.8	55.9	130	110	160
Urban	95.5	97.0	98.0	26.9	17.6	25.2	150	125	170
Mother's Education									
No Education	95.9	96.4	98.5	40.7	45.0	54.5	120	100	150
Primary Education	96.6	93.4	98.9	43.5	55.6	43.8	120	120	150
Upper Primary and Secondary	96.6	97.8	95.8	39.7	44.2	39.4	150	120	150
Higher Education	97.3	99.3	98.0	35.1	31.3	32.6	150	120	160
Wealth Index									
Poor	95.2	89.1	96.3	43.1	56.8	51.0	120	110	150
Middle	96.6	91.8	97.3	40.2	42.7	44.5	125	100	152
Rich	97.3	99.3	98.0	38.5	33.9	37.6	150	120	170
Caste									
Schedule Castes and Scheduled Tribes	93.6	91.2	97.2	38.3	47.5	42.3	150	120	175
Other Backward Classes	97.2	97.3	97.5	44.0	43.3	47.4	140	130	172
General	97.3	89.8	97.5	39.1	45.0	37.2	115	100	120
Religion									
Hindu	95.9	93.7	97.5	41.8	46.3	42.9	130	115	170
Muslim	97.9	91.6	97.6	38.7	37.1	42.1	140	120	150
Christian	76.8	100.0	93.4	24.9	32.6	43.2	226	290	220
Others	96.9	97.3	100.0	37.0	43.3	38.6	112	85	90
Total	96.4	93.4	97.2	40.6	44.4	44.5	130	115	160

Note: Modern treatment includes treatment provided by public doctors and nurses and private doctors and nurses; <25 are unweighted cases; Reference Period for Medical Care Expenditure is last month.

Table 5: Results of Logistic Regression Analysis of Short-Term Morbidity, Health Care Utilization and ANOVA Test for Medical Care Expenditure of Children under Five by Health Knowledge of Women and Background Characteristics, India, 2005

Background Characteristics	Morbidity Among Children	Health Care		
	Short Term Expβ (CIs of Expβ)	Treatment received Expβ (CIs of Expβ)	Treatment Received (outside the village) Expβ (CIs of Expβ)	Results of ANOVA test for Median Expenditure on Medical Care (in Rupees)†
Health Knowledge				
No or low health Knowledge®	1.0	1.0	1.0	130***
Medium health Knowledge	.543***(.449,.657)	1.232**(.977,1.486)	1.072(.920,1.249)	115***
High Health Knowledge	.390***(.319,.475)	1.973**(1.880,2.066)	1.147*(.989,1.331)	160***
Sex of the Child				
Male ®	1.0	1.0	1.0	150***
Female	.886*(.765,1.025)	.946(.688,1.300)	.939(.834,1.057)	120***
Place of Residence				
Rural ®	1.0	1.0	1.0	130
Urban	.837**(.703,.997)	.787(.541,1.144)	.385***(.335,.443)	150
Level of Education				
No Education ®	1.0	1.0	1.0	120***
Primary Education	.889(.721,1.095)	1.458(.882,2.411)	1.066(.895,1.269)	120***
Secondary and upper primary Education	.697***(.577,.842)	.981(.659,1.459)	1.052(.904,1.223)	150***
Higher Education	.808(.602,1.084)	1.398(.670,2.914)	.991(.789,1.244)	180***
Wealth Index				
Poor ®	1.0	1.0	1.0	120***
Middle	0.555(447.5,662.5)	1.403(.925,2.127)	1.804***(1.687,1.921)	121***
Rich	0.535(.445,.625)	2.285***(1.495,3.494)	1.810***(1.680,1.941)	150***
Caste				
Scheduled caste and Scheduled tribe ®	1.0	1.0	1.0	105***
Other Backward Class	1.079(.898,1.296)	1.288(.824,2.015)	1.045(.902,1.212)	150***
General	.872(.706,1.079)	.605**(.385,953)	.937(.791,1.110)	150***
Religion				
Hindu ®	1.0	1.0	1.0	150
Muslim	1.020(.819,1.270)	1.008(.597,1.701)	.846*(.704,1.016)	144
Christian	.840(.428,1.649)	.624(.219,1.777)	1.072(.692,1.661)	220
Other	.744(.492,1,125)	2.490(.779,7.958)	.775(.569,1.053)	100

Note: ®-Reference category of different characteristics;
***p<0.01; **p<0.05; *p<0.10

†Association of median expenditure on medical care for short term morbidities and health knowledge is tested significant with ANOVA linearity test.