Original Article

Sociology of Child Health Care Practices in Nanded District of Maharashtra, Central India — A Single Centre Hospital-based Cross-sectional Study

Kishor G Rathod[1], Mohd Ubaid ur Rahman Mohd Azam[2], Balasaheb B Suroshe[3], Neeta K Hatkar[4]

Background : Despite the yearly increase in budget and improved health infrastructure, the improvement in the health indices is not parallel to them. It indicates that there are other factors influencing the health indices like morbidity and mortality.

Objective : This study highlights the socio-demographic factors and their importance in child health care.

Methods : A single-centre hospital-based cross-sectional study was done at a tertiary health care centre in central India. One thousand cases were enrolled over 3 years and evaluated for the association of socio-demographic parameters and child health status indicators.

Results : Of the 1000 cases, immunization status in children had a significant association with mother's education status (p=0.005), father's education status (p=0.001), and religion (p<0.001) but not associated with socio-economic status (p=0.254) and place of residence (urban *versus* rural) (p=0.916). The pallor was significantly associated with the mother's education status (p=0.001), father's education status (p=0.005), socio-economic status (p=0.001) but not associated with the sex of the child (p=0.934), place of residence (p=0.807) and religion of the participant child (p=0.812).

Conclusion : Immunization status of the child was significantly associated with the educational status of parents and religion while pallor was associated with the educational status of parents and economic status. The educational status of the parent is significant as for as child health care is concerned.

The health of an individual and population is strongly influenced by social determinants. The impact of social inequalities on health is the most neglected area. The state of Kerala in India is well studied, highlighting the relationship between its phenomenal reduction of socio-economic inequalities in the last 40 years and improvements in the health status of the population as a whole, thereby improving the health indices comparable to the developed nations. Government with its Social, Political and Economic wings operate at every level of human life let it be household, village, municipality, nation, or globe, and influences the health of an individual, families, and communities[1].

Social determinants of health have a strong effect

[1]MBBS, MD (Ped), PhD, FCPS, Associate Professor, Department of Paediatrics, Dr S C Government Medical College, Nanded, Maharashtra 431606

[2]MBBS, DNB (Ped), DCH, MD (Micro), Assistant Professor, Department of Paediatrics, Government Medical College, Aurangabad, Maharashtra 431001

[3]MBBS, MD (Ped), Associate Professor, Department of Paediatrics, Government Medical College, Jalgaon, Maharashtra 425001

[4]MBBS, MD (Ped), Associate Professor and Head, Department of Paediatrics, Sri Bhausaheb Hire Government Medical College, Dhule, Maharashtra 424001 and Corresponding author

Editor's Comment :
- Educational level of parents and literacy rate in the community are most important of all the socio-economic parameters influencing child health care in the community.
- Parents educational status will definitely help to improve Immunization status & amp; nutrition well being of children.
- All Government departments should work together to attain socio-economic equality and improvement in child health care of the community.

on health-promoting behaviours in the community. Health equity is possible only with equal distribution of social determinants among the population. The richest countries in the world also have socio-economic inequalities in health between the rich and the poor and because of these inequalities unable to achieve the health indices to 100%. Nanded district of Maharashtra state has more than 70% rural households, providing a sufficiently large size of sample for reliable estimates of most of the health and health-related demographic indicators for the rural population as many health care programs are designed considering the rural population at its centre.

Bhutan is almost 90% covered with provision for safe drinking water, it helped in the eradication of anaemia in women by reducing the exertion faced by women in the collection of potable drinking water. It depicts the importance of good social policies to

improve not only social status but even medical conditions like anaemia.

In Nepal, current health system arrangements can reduce health inequalities in child malnutrition by 4 percent while the current health system in Sri Lanka can help in the reduction of 10 percent of inequalities in child malnutrition[2]

Analysis of health system access and other social determinants in Nepal and Sri Lanka for malnutrition in children[2].

Country	Health System Factors	Socio-economic and Political Context	Socio-economic Position	Intermediary Determinants
Sri Lanka	4%	21%	49%	20%
Nepal	10%	10%	46%	40%

The Gadchiroli district of Maharashtra has the best population per doctor but still has a very low proportion of utilization of health care facilities and very low coverage of immunization of children (46.4%). This scenario highlights that the mere availability of health infrastructure may not be sufficient for a better outcome though it is a must for improving the health system[3].

Considering the increasing yearly budget and improvement in the health system, from the above scenario it is obvious that there are many factors apart from the health system and mere availability of services, which influence the uptake of child health care practices by the parents or community. Hence this study is an attempt to highlight these socio-demographic factors and their role in child health care practices ie, social causes of poor health and avoidable inequalities.

MATERIALS AND METHODS

It was a hospital-based single centre prospective cross-sectional study undertaken to determine the association of socio-economic factors with child health care practices among study subjects in the Nanded district of Maharashtra State of India from January 2017 to December 2019 followed by analysis, interpretation, and write-up.

Inclusion and Exclusion Criteria :

(i) Parents who gave consent for enrolment, for patients with age group from newborns to completed 12 years and resident of Nanded District. (ii) Only one participant (the child) from one household was enrolled to avoid the repetition of demographic data. Critical patients (children) were excluded from the study to avoid delay in the treatment. (iii) Patients visiting the Outpatient Department who were not residents of the Nanded district were not enrolled in the study.

Procedure — The prototype of modern child health care practice taken into consideration was immunization status in children and the health status indicator taken into consideration was the presence

of pallor as it is easy to examine for presence or absence of anaemia without subjecting them to further investigations. The patients who visited the investigator for treatment at the Outpatient Department were enrolled in the study.

Sample Size — According to DLHS-4- (District Level Household and Facility Survey) Nanded Fact-Sheet[4] the children aged 12-23 months having full immunization with BCG, Measles and 3 doses of Polio and DPT was 51.1%. This DLHS -4 data series was taken into account for sample size calculation as it was the survey done in the year 2012-13. Considering this percentage the sample size was calculated as follows:

$N = 4 \times p \times q / e2 = 4 \times 51.1 \times 48.9 / 52 = 9995.16 / 25 = 399.81 \sim 400$. Thus sample size is 400. To make the study substantial, the sample size taken was 1000.

Data collection process — A validated semi-structured questionnaire was used in the initial stage of data collection. The mother/caretaker of the participant child was interviewed to collect all information as follows:

(i) For demographic details religion, address, and rural/urban status was inquired, (ii) Individual information on history included the participant child's age, sex, and birth order, (iii) For socio-economic parameters; per capita income, education of parents were inquired. The socio-economic status was classified according to modified BG Prasad's classification[5], (iv) In child health care immunization status and presence and absence of pallor were taken into account. The data regarding vaccination covered was BCG, OPV, IPV, DPT, Pentavac, Measles, and MR which were supplied by the Government of India free of cost under the Universal Immunization Programme.

Ethical issues — The methodology, the Pre-tested questionnaire, Patient Exam form, evaluation procedure and informed consent form were approved by the Institutional Ethics Committee of Dr Shankarrao Chavan Government Medical College, Nanded, Maharashtra, India. The parent or caretaker was informed about this study. Sufficient time was given to decide on enrolment into the study. After voluntary written consent of the parent/caretaker, the child was enrolled and the questionnaire was filled out after the interview. Counselling about further investigations and treatment was done according to the diagnosis wherever necessary. The critical patients were not enrolled in the study to avoid delay in further treatment.

Data entry — Data entry was done by using MS Office-Microsoft Excel -2007 Software. Statistical Analysis was carried out with the help of IBM-SPSS statistical software (V.16.0; SPSS Inc, Chicago, Illinois, USA). Proportions were tested by the Chi-square test. Associations in variables with p- values less than 0.05

were considered significant while variables with p-values less than 0.001 were considered highly significant. Bivariate analyses were carried out to examine the level and trends. The Chi-square test is used to examine the significant association between categorical variables (outcome variables and socioeconomic indicators). The patients not completed the age-appropriate vaccination were counselled about the importance of the vaccination and referred to the immunization Outpatient Department for a catch-up vaccination.

The anaemic patients were subjected to further investigations and appropriate treatment after counselling and the consent of the parent/caretaker.

RESULTS

Out of 1000 participants, the youngest patient was 5 days old and the eldest was 12 years. The most common age group was between 1 to 5 years. The percentage of children under 5 years of age in this study was 63. The male to female ratio in our study is 1.3:1. Forty-nine percent were Hindus, 27.5% were Buddhist, 22.6 % were Muslims, 0.2% (2 participants) were Christian and 0.1% (only 1) was Sikh. The socio-demographic characteristics of the participants and the association with immunization and pallor are shown in Tables 1,2 and 3.

DISCUSSION

Age and Sex :

According to Census 2011[6], the male: female ratio of the Nanded District is 1.06:1 (1, 730075 males and

Table 1 — Socio-demographic profile of the participant children and their families		
Parameters	Category	n (%)
Age	<1 Month	11(1.1)
	1-<6 Months	72 (7.2)
	6 Months-1 Year	111 (11.1)
	>1 Year-5 Years	433 (43.3)
	>5 Years-12 Years	373 (37.3)
Sex	Males	569 (56.9)
	Females	431 (43.1)
Religion	Hindu	496 (49.6)
	Buddhist	275 (27.5)
	Muslim	226 (22.6)
Residence	Rural	615 (61.5)
	Urban	385 (38.5)
Pallor	Pallor present	817 (81.7)
	Pallor absent	183 (18.3)
Immunization status	Fully immunized	526 (52.6)
	Partially Immunized	437 (43.7)
	Not immunized	37 (3.7)

Table 2 — Immunization and Socio-demographic parameters		
Parameters	Chi-square X^2	P value
Sex	3.152	0.207
Mother's education	22.05	0.005
Father's education	29.83	0.001
Place of residence	0.18	0.92
Religion	33.33	<0.001
Economic status	7.79	0.25

Table 3 — Pallor and demographic parameters		
Parameters	Chi-square X^2	P value
Sex	0.02	0.93
Mother's education	20.63	0.001
Father's education	18.38	0.005
Economic status	19.28	0.001
Place of residence	0.06	0.81
Religion	0.42	0.81

1631217 females) and the sex ratio at birth is 888 females for 1000 males (1.13:1). In our study it is 1.3:1. It is well-known fact that male child is cared better than female in India because of the patriarchal system of descendence. (Table 1).

Religion :

According to Census 2011, there were 74.4% Hindus, 14.4% Muslims and 10.5% Buddhists. In our study lesser percentage of Hindus and more percent of Muslims and Buddhist patients availed of the services because later two availed the Government facilities more than Hindus (Table 1).

Place of residence (Rural *versus* Urban) :

According to Census 20116, 72% of households are rural and 28% are urban residents but in our study (38.5% of urban residents) more percent of urban patients visited the facility as the health care centre is located near the urban area ie, district place.

Anaemia :

More percent (81.7%) of anaemic patients in this study (76.1% according to NFHS-5[7]) (National Family Health Survey) may be due to the ill children visiting the health facility and the families from middle and lower socio-economic strata (where the prevalence of anaemia is more) visiting the government health care facilities.

Immunization :

The percentage of children fully immunized was 52.6% in our study. According to NFHS-5[7] the percentage of fully immunized 12-23 months children was 75.5%. It is well-known fact that as age advances immunization decreases and our study has taken into account of children from the newborn age group to 12 years of age.

Immunization and Socio-economic factors :

Our study showed a significant association of immunization with parental education and religion but no significant association with the sex of the child, place of residence and economic status. It may be because the majority of the patients were from rural areas where the immunization sessions are held regularly at primary health centres, sub-centres and Anganwadis. Like many other studies, in our study Hindus availed more immunization services as compared to Buddhists and Muslims. (Table 3). In a study by Hossain, *et al*[8] the Odds Ratio for full immunization and educated mother was 10.21 (CI:

4.10-25.37) and for educated father 8.71 (CI: 4.03-18.80). In a study by Bettampadi D, *et al*[9] in 2021, the Adjusted Odds Ratios for full vaccination in the 3 surveys were 1.08, 1.10 and 1.08 for Hindu versus other religions respectively, indicating an association between full vaccination and Hindu religion. In a study by Adenike, *et al*[10] household income and place of residence were not significantly associated with immunization status (p>0.05) and 60% of rural and 69% of urban residents had full immunization and the difference was not significant (p=0.165). In a study by Priyanka Dixit, *et al*[11] sex of the child was not significantly associated with immunization (p=0.207) but there was a small degree of discrimination favouring boys in medical treatment for common symptoms of infection.

Pallor (Anaemia) and Socio-economic factors :

Pallor was significantly associated with parental education and economic status because knowledge about a balanced diet and affordability are important to prevent anaemia. But anaemia was not associated significantly with the sex of the child, place of residence and religion. In a study by Priyanka Dixit, *et al*[11] there was no significant difference in anaemia in boys and girls. In a systematic review and meta-analysis of anaemia among children of Ethiopia by Gebrie A, *et al*[12], low literacy of families (OR 1.3 (95% CI:1.4-1.9), low socio-economic status (OR-1.9 ; 95% CI 1.1-3.0) and rural residence (OR-3.3, 95% CI 1.7-6.1) were significantly associated with anaemia. In a study by Dey S, *et al*[13] all types (mild, moderate, and severe) of anaemia were more prevalent among Hindu children (OR-2.97; p=0.000) but mild and moderate anaemia was more prevalent among Muslim children (OR-1.85; p=0.001).

Conclusion

Parental education plays a major role in the decision-making of families regarding childhood vaccination and preventing anaemia in children. Parental education is the most important of all the socio-economic parameters. Hence education is the key to improving child health and child healthcare. Social Determinants of Health (SDH) should be placed on high priority of all Government Departments and not limited to the Ministry of Health alone. In a nutshell, improving the educational level of parents will improve the child health care of the community.

Strengths:

The present study has many aspects of strength - This is the first of its kind study in this region which has taken detailed account of the personal, social, economic, and educational background of the families in the community regarding child health care. The sample size of the study is substantial enough that it has permitted to test of many associations of variables with sufficient statistical power.

National datasets like Census 2011, NFHS, DLHS, and RSOC[14] (Rapid Survey on Children) can be used for the comparison of various parameters.

Limitations:

The exact timing of vaccination and categorization of socio-economic indicators was dependent on the history provided by family members of study participants.

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Conflict of interest : None.

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