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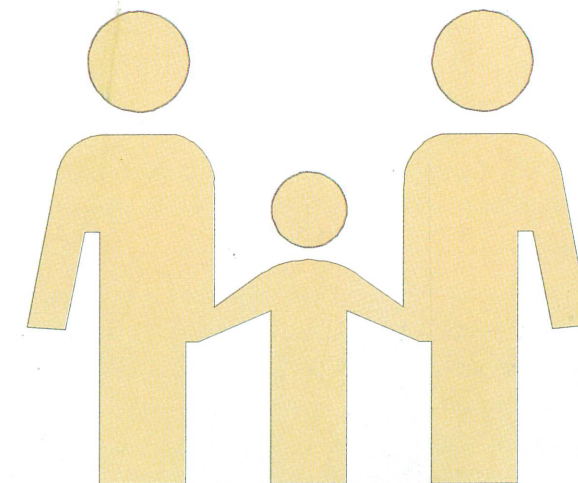
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EMERGENCY MANAGEMENT PLANNING FOR HOSPITALS

Muzaffar Ahmad* and J.S. Murli**

ABSTRACT

Hospitals being the principal responders during an emergency, any degree of disruption of the essential functions can further create an adverse impact on the community and also affect the confidence of the hospital workers. The past incidences of disasters have exposed the poorly prepared response systems in our hospitals. Thus, a comprehensive Emergency Management Plan need to be developed that would help the organisation to meet the imbalance between need and available resources arising out of the emergency.

Keywords: Emergency, Preparedness, Disaster Risk Reduction (DRR)

INTRODUCTION

Hospital preparedness has changed from just a response to any major event to a series of phases, including mitigation, preparedness, response, and recovery. Emergency management can survive and thrive in the future if it embraces the lessons learnt from the past and moves forward with a progressive agenda. Past experiences during emergency situations have not only highlighted the magnitude of damage each hazard can result in but also stimulated various agencies to get prepared and respond to the situations in a much more responsible manner. Since accurate information and training is not readily available to emergency and disaster responders to meet the challenge effectively, the handling of the emergency situation remains difficult and hence, ineffective. Many instances have revealed the medical systems are ill-prepared to maintain a medically safe environment and essential health care services for their patients. Experts have recognized the need for improved hospital preparedness that addresses the full range of potential disasters.

India is vulnerable to a large number of disasters and over the past few years, the dimensions of disasters have distinctly changed. Each year, floods cause loss of

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human lives and financial assets to the tune of millions of rupees in the states of Bihar, eastern U.P. and Assam in our country. The efforts to reconstruct and rebuild hospitals which were completely destroyed as in the Bhuj earthquake have cost to the tune of billions of rupees. Of course, the cost of human lives that were lost cannot be estimated at all. Almost all the democratic countries in the world are facing threats of terrorist attacks in the form of explosives, chemical, biological or radiological weapons. The Ahmedabad serial blasts and recent fire in AMRI hospital in Kolkata where about 90 patients were charred to death; have again raised concerns of hospital authorities to prepare themselves for an effective emergency response and recovery from the crisis situation. Recent incidences of fire accidents in high rise buildings and even hospitals; have further exposed the deficiencies in degree of safety and emergency preparedness at various levels.

Role of Hospitals in Emergencies

Hospitals are at the receiving end of victims and have the direct role of saving lives. They are the prime responders in any emergency/disasters, since victims invariably need medical attention and emergency care. Hospitals are pre-requisites for social stability and economic development and thus, considered as the symbols of social progress. In order to protect public safety and public health, every hospital and its emergency services need to enhance its capacity to reduce vulnerabilities, and to improve its ability to respond to and recover from emergencies effectively.

Hyogo Framework for Action (2005-2015)

Globally, Disaster Risk Reduction (DRR) approach is gaining popularity. It encompasses mitigation, preparedness and advocacy as the basic tools for emergency management planning. The World Conference on Disaster Reduction in Kobe held in January 2005 concluded with the Hyogo Declaration which contends, "States have the primary responsibility to protect the people and property on their territory from hazards and... to give high priority to disaster risk reduction in national policy, consistent with their capacities and resources available to them."

Approach to Emergency Management Planning

An essential component of a DRR strategy is preparedness that includes all measures to build capacities to respond to, and recover from emergencies. Capacity building is the ability to manage risks in terms of organisation, system, resources and partnership with other agencies. Emergency preparedness plans of hospitals are essentially contingency plans when a hazard overwhelms the capacity of a facility and any mitigation measures that may have been put in place. Unfortunately, an early warning system that is in place for floods and cyclones is not available for all other possible disasters. Hence, the contingency plans need to be developed with a multi-hazard approach.

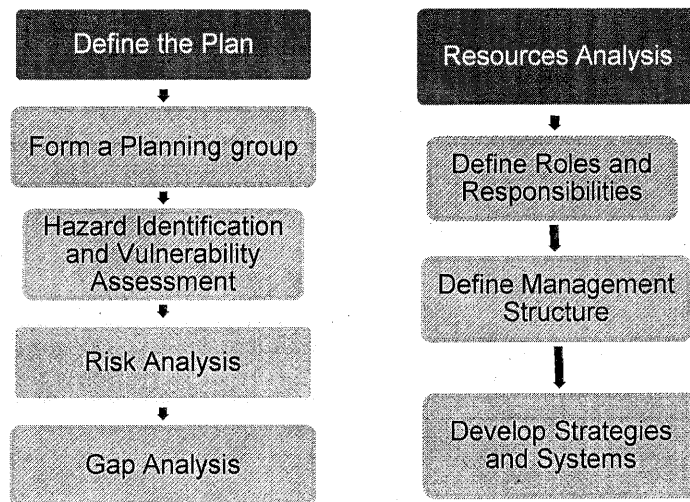
The main objective of the emergency/disaster plan is to optimally prepare the staff and institutional resources of the hospital for effective performance in different disaster situations. An Emergency Preparedness Plan is an agreed set of arrangements for responding to and recovering from emergencies. It should essentially describe how to react to emergencies by defining roles and responsibilities, including co-ordination; how to carry out assessments; and give details on procurement and storage procedures. The plan must also detail what and how emerging disasters are to be monitored, and the role of EWS in this process. A historical account of previous emergencies in the country would be useful in indicating types, frequencies and intensities of disasters. Further, the training needs of the staff and other stakeholders must also be detailed in the plan after due deliberations.

Essential Components of Hospital Emergency Preparedness, Response and Recovery Plan

- **Hazard prevention plan:** Since all hazards are not predictable or preventable, hazard prevention plans must be developed which includes strategies/activities to prevent exposure to hazards.
- **Vulnerability reduction plan:** This involves assessment of the vulnerability and resilience of the hospital building to withstand the impact and consequences of hazards and strategies to reduce the vulnerabilities.
- **Emergency preparedness plan or capacity development plan:** Plan to build response capacity of the hospital by means of policies, protocols, guidelines, resource development including people and facility development, services, etc.
- **Emergency response plan:** Plan to use the existing capacities to deliver relief or response by activating policies for directions and plans, mobilization of resources, use of developed systems for emergency management and actual implementation of guidelines/procedures for the developed systems.
- **Recovery and reconstruction plan:** A plan to restore services and replace damaged elements of hospital for the better.

Emergency Planning Process

With all the prevailing challenges, there is an urgent need to consolidate our agenda for disaster preparedness. There is a need to move from 'reactive' to 'proactive' mode of disaster surveillance. The emergency planning process can be represented as any other process planning:



Development of the Plan: The Basics

A disaster preparedness committee should be nominated to coordinate all disaster planning activities within the hospital as well as local agencies. The committee must meet at least once a month and report to the Safety Committee subsequently. Each department in the hospital should develop its own set of detailed procedures to be followed whenever an intra-department or hospital-wide emergency situation arises. Such plans need to be submitted to the Disaster Preparedness Committee for approval and further integration with the hospital-wide plan. Periodic mock-drills, reviews and necessary modifications must be undertaken with utmost seriousness.

The hospital emergency management plan should address both external as well as internal disasters. Hazard-specific plans need to be formulated and disseminated to all the staff. The plan should specifically mention the various emergency codes adopted by the hospital such as Code Blue for Medical Emergencies, Code Red for Fire, etc. and also describe all exit and evacuation plans in the event of a disaster including internal emergency situation like fire in any patient care areas. Periodic mock-drills needs to be undertaken to sensitise each and every staff member and such mock-drills should be documented for review by the committee. The plans should include strategies and action plans for awareness generation among the hospital staff and patients as well.

Hazard and Vulnerability Assessment

The most important pre-requisite to any preparedness plan is risk or hazard

Major Elements of Emergency Management Planning

1. Background
2. Plan Description
3. Aim and Objective
4. Emergency Management Group/committee
5. Emergency Preparedness Plan
 - a. Hazard Prevention
 - b. Vulnerability Reduction
 - c. Risk Reduction
6. Management Structures
7. Roles and responsibilities
8. Hospital Response plan
9. Recovery and reconstruction Plan
10. Annexes
 - a. Glossary
 - b. Abbreviations
 - c. Directory of Contact persons
 - d. Inventory of resources – of hospital as well as partner agencies
 - e. Relevant SOPs, Standing Instructions of Hospital.

assessment. All possible hazards with potentiality to affect the hospital and all of its vulnerable areas should be identified first. This may be transformed into a hazard map. The hazard mapping would subsequently followed by Risk Assessment. An example of assessment is depicted below:

Hazards	Vulnerabilities	Risks
Earthquakes, Floods, Fire, etc.	• People • Properties • Services • Environment • Livelihood	• Probability of trauma/disability • Probability of death • Probability of spread of disease • Probability of contamination • Probability of displacement • Probability of loss of income or property • Probability of disruption of essential services including communication

Response Phase

This includes all the activities that need to be carried out once the emergency occurs and requires coordination. The main activities involved are:

- Activation of plans and systems developed

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- Activation of Incident Command Centre / Operation Centre
 - Mobilisation of resources
 - Coordination and networking for referral of cases
 - Management of emergency cases
 - Constant monitoring of the event and Evaluation

Finalisation of the Plan

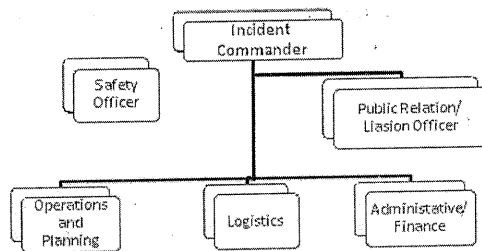
The plan must include the following aspects:

- **Writing the plan:** The plan is not a plan unless written and approved by the head of the organisation. Hence, once the risk analysis and response activities are identified, the next step is to write the plan and get it approved by the head of the organisation.
- **Dissemination of the plan:** The written document i.e. the plan need to be disseminated to all the stakeholders and staff.
- **Regular testing of the plan:** A plan can be declared effective only when it is pre-tested. Therefore, periodic mock-drills should be arranged to know its functionality, deficiencies, acceptability and doability in the hands of those who would implement it.
- **Review and revision:** The plan needs to be reviewed at least annually and evaluated in reference to the implementation of the plan and updated, wherever necessary.

Emergency Management Structure

The planning committee must include all the major stakeholders and it should involve all the department heads as well as staff and community representatives. The management structure during an emergency is outlined below:

Prime role of the Incident Commander (IC) is to activate the emergency plan in the event of a disaster situation and further coordinate all activities throughout the emergency management process and finally call off the plan once the emergency situation is stabilised. The incident commander shall be the senior most administrator of the campus. The CEO or his/her designee shall assume the role of IC whenever the chief administrator is not around. He/She must have the full command and control over all the hospital personnel and resources during an emergency.



Important Considerations for Emergency Preparedness Manual

The plan must contain all the aspects of emergency response starting from pre-hospital role to disposal of patients and dead bodies.

- **Pre-hospital care:** It should describe the entire command and control activities, safety and security measures to be put on place throughout the course of disaster/emergency. It includes time-management, all kinds of communication, initial assessment and triage, immediate treatment and safe transportation.
- **Hospital care:** The emergency plan should specify the following:
 - Alert, recall, deployment, expansion system
 - Area earmarked for triage and primary treatment areas for emergent treatment
 - Secondary treatment areas like OT, ICU, Wards, Blood Bank, Support services
 - Control centre
 - Information centre
 - Volunteer reception area
 - Waiting area for relatives of victims
 - Press room
 - Documentation
 - Disposal of patients
 - Identification and disposal of dead bodies including area earmarked for temporary morgue
 - Security
 - Catering for patients, visitors, press and staff

-
- Reporting to government authorities
 - Psychological counselling to victims and relatives
 - Public health measures

Communication Plan

During an emergency, the most vital service that may get disrupted is communication. Being the lifeline of any management system, regular maintenance of existing devices, alternative communication back-up system and measures for early restoration during communication failure; remains the essential objective of the emergency management planning. It is worth noting that mobile phones that are too handy these days have been proven useless during disasters. Satellite communication systems such as VSAT have been used successfully by the Armed Forces during rescue operations. These and any other latest technology available can be tested and used to upgrade the inventory of communication devices.

Back-ups and Redundancies

The hospital authorities need to ensure adequate backup arrangements for water supply including safe drinking water, electric supply, hospital waste disposal and redundancy of communication network. Further, these alternative back-up arrangements should be made disaster-proof and can be available during an emergency.

Networking

No organisation can work alone or in isolation during disasters when the need exceeds the coping capacity. Hence, hospitals should develop a strategy for networking and building partnership with other hospitals and agencies for additional human resources, equipment and infrastructure, as well as for referral of cases during emergency situations.

Media and Crowd Management

The most stressful and difficult task during an emergency is to control the crowd and media. Both are equally sensitive to be dealt with. The plan should specify a nodal person to act as the spokesperson to deal with the media and provide frequent updates on the status of patient care and other related things. Adequate arrangements for the seating, drinking water and catering needs will definitely avoid unnecessary negative coverage and help the administration in concentrating

on the actual job of patient care. To control the huge crowd that is unavoidable during a crisis situation, adequate security staff need to be deployed. Some earmarked area for waiting for the relatives of victims with provision for drinking water, hot and cold beverages and some snacks and food facilities will exhibit a patient-friendly and social image of the hospital. Timely updates in the form of displays or announcements on the status of their near and dear ones will further make the task easier by easing the stress levels of the anxious relatives.

Staff and Family Preparedness

Hospital staff members remain the key responders during an emergency. Their sensitisation and awareness to enhance the preparedness level will further ensure an effective response mechanism in the event of an emergency. Since concern about one's own family is also an essential requirement, it is prudent that the families of each staff should also be involved in preparedness campaigns. Each staff should be encouraged to sensitise his/her family members about the actions to be taken and whom to contact and where to move in case of an emergency. Alternative communication systems should be identified and pre-tested well in advance.

CONCLUSION

Any emergency situation leads to a lot of chaos and confusion and the safety of patients, staff and properties becomes a matter of prime concern. Hospitals are considered symbols of hope and safe haven for the community. It is the responsibility of each hospital to get prepared and develop an emergency management plan. The risk-reduction strategy for disasters and emergency situations involve mitigation measures, preparedness and advocacy among the community. The emergency management plan should further be tested and reviewed periodically and revised, if required.

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SOCIO-DEMOGRAPHIC CORRELATES OF NUTRITIONAL STATUS OF ADOLESCENT GIRL STUDENTS IN PATNA, BIHAR

Kumkum Kumari*

ABSTRACT

Adolescence is a crucial period in a woman's life where socio-demographic factors not only affect her health but also determine the health of the future generations. The present study was conducted to examine the socio-demographic factors associated with the nutritional status of adolescent girls. In this study, 300 adolescent girls aged 12-18 years were selected within the jurisdiction of Patna municipal area of Bihar state in India. The findings showed a significant difference in the nutritional status of these girls in relation to their castes, religions, socio-economic status, education and occupation of parents. Higher the economic status, lower the percentage of malnutrition and vice-versa. A significant correlation was found in the nutritional status among the girls when it was compared with the educational status and occupation of fathers. Thus, the study shows the need for a timely suitable action on the socio-demographic factors affecting the nutritional and health status of these prospective mothers which will ultimately have an impact on the future generations.

Keywords: Nutrition, Adolescent girls, Socio-economic group, Body mass index

Adolescence is a period of rapid growth and maturation in human development after infancy. It is a crucial period in a woman's life where socio-demographic factors not only influence her health but also determine the health of the future generations. Under-nourishment and over-nourishment in young people are increasing the problems in both developing and developed countries¹. Nutritional status of female children may be affected in those communities where discrimination against the female-gender exists. Educational status and socio-economical level of parents strongly influence nutritional status of adolescent girls. As dietary practices vary in different religions and caste groups, problems of malnutrition also vary among these groups. Literacy status of adolescent girls determines their access to useful nutrition-related information and thereby, it influences their nutritional status through dietary modification.

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Adolescence is the future generation of any country. Their nutritional needs are critical for the well being of a society but for many years, their health has been neglected because they are considered to be less vulnerable to diseases compared with relatively young children or the old people². If the adolescents are well-nourished, they can make the optimal use of their skills, talent and energy and would be healthy and responsible citizens. Adolescence, a second period of rapid growth may serve as an opportunity for compensating faltered early childhood growth though the potential for significant catch-up is limited³.

OBJECTIVES

The basic objectives of this study are to

- (i) assess the nutritional status of adolescent girls of Patna municipal area, and
- (ii) study the socio-demographic factors affecting their nutritional status.

MATERIALS AND METHOD

Three hundred adolescent girls in the age group of 12-18 years were selected from nine government colleges and six government girls' schools within the jurisdiction of Patna municipal area, capital of the Indian state of Bihar. 20 adolescent girls from each of these identified colleges and schools were randomly selected. An interview schedule was used to gather information. Socio-demographic indicators such as caste, religion, age of girls, educational status and income status of the parents were ranked and compared against the nutritional status of the girl students. These adolescent girls were classified into low, middle and high income groups according to their monthly family income in rupees up to 10000; 10001-20000 and above 20000 respectively. Information on family income was calculated by adding income from all sources. Economic status was based on the schedule adopted by HUDCO regional office, Patna (2010). Nutritional status of the girls was assessed by Body Mass Index (BMI). BMI was categorized into four groups as under:

<20	= Underweight
20 - 24.9	= Normal
25 - 29.9	= Overweight
>30	= Obesity

FINDINGS AND DISCUSSION

It was found that the economic status of the family was associated with the nutritional status of the adolescents. As income group of girls improved from lower income group (LIG) category to middle income group (MIG) category, a decline

from 29.34 per cent to 22.7 per cent of under-weight girls was observed. Among the normal ones, it was even more pronounced and the incidence rose from 11.6 per cent to 57.0 per cent. The incidence of obese was higher in high income group (HIG) and no obese was found in the LIG category though the sample for obese was very small (Table 1).

TABLE 1
DISTRIBUTION OF ADOLESCENT GIRLS BY THEIR NUTRITIONAL AND SOCIO-ECONOMIC STATUS

Socio-economic status	Nutritional status according to Body Mass Index (BMI)								Total	
	<20 (Under Weight)		20 - 24.9 (Normal)		25-29.9 (Overweight)		>30 (Obesity)			
	No.	%	No.	%	No.	%	No.	%	No.	%
Low Income Group	49	29.34	14	11.6	0	0	0	0	63	21
Middle Income Group	38	22.7	38	31.4	2	20	2	100	80	26.7
High Income Group	80	47.9	69	57.0	8	80	0	0	157	52.3
Total	167	55.7	121	40.3	10	3.3	2	.7	300	100

$\chi^2 = 22.998$; $df = 6$, $p < 0.005$

The results clearly showed that higher the economic status, lower the percentage of malnutrition and vice-versa. As for the HIG category, the socio-economic affluence permitted fulfilment of nutritional requirements of the girls; the cases of malnutrition (under-weight) were the least which has been revealed in the findings of an earlier study of urban female adolescents of Allahabad⁴.

Chi-square test was applied to find out the effect of socio-economic status of parents on the nutritional status of the adolescent girls. The result showed that the number of normal girls was more in well-to-do families than in those with poor socio-economic status.

Nutritional status and caste of adolescent girls has been analyzed. More number of girls belonging to general caste category was found to be normal, healthy and obese in comparison to the girls belonging to lower caste categories. Over-consciousness in more than one aspect among the adolescent girls could be the reasons due to which two girls out of every five were suffering from under-weight in general caste category also.

This finding was further substantiated by chi-square test for the dependence of attributes (social category and nutritional status) and it was found that nutritional status was not independent of social category.

TABLE 2
DISTRIBUTION OF GIRLS BY THEIR NUTRITIONAL STATUS AND CASTE

Caste	Nutritional status according to Body Mass Index(BMI)						Total
	≤20 (Under Weight)		20.1- 24.9 (Normal)		≥ 25 (Over weight)		
	No.	%	No.	%	No.	%	No.
General	81	39.51	46	55.42	10	83.33	137
BC I	44	21.46	10	12	0	0	54
BC II	64	31.23	27	32.53	2	16.67	93
SC	14	6.83	-	-	-	-	14
ST	2	.98	-	-	-	--	2
Total	205	68.33	83	27.67	12	4	300

$\chi^2 = 20.593$, $df = 8$, $p < 0.025$

The nutritional status of adolescent girls was examined on the basis of the religion. 28.08 per cent and 22.22 per cent of the girls were found to have normal nutritional-level from the Hindu and Muslim religion respectively, while girls suffering from malnutrition (under weight) were 68 per cent and 72.22 per cent respectively. Thus, percentage of malnutrition was less in Hindu religion in comparison to other religion (Table 3).

It appeared that the religion had a marked effect on the nutritional status of the adolescent girls. Least level of under nutrition in terms of BMI was found in Hindu girls in comparison to other religious categories, although ratio was at very high level and two out of every three Hindu girls were found to be under weight.

TABLE 3
DISTRIBUTION OF ADOLESCENTS BY THEIR NUTRITIONAL STATUS AND RELIGION

Religion	Nutritional status according to Body Mass Index(BMI)						Total
	≤20 (Under Weight)		20.1- 24.9 (Normal)		≥ 25 (over weight)		
	No.	%	No.	%	No.	%	No.
Hindu	177	68.08	73	28.08	10	3.85	260
Muslim	26	72.22	8	22.22	2	5.56	36

Religion	Nutritional status according to Body Mass Index(BMI)						Total
	≤20 (Under Weight)		20.1- 24.9 (Normal)		≥ 25 (over weight)		
	No.	%	No.	%	No.	%	
Christian	2	100.0					2
Sikh	-	-	2	100			2
Total	205	68.33	83	27.67	12	4	300

$\chi^2=6.873$, $df = 6$, $p > 0.05$

The nutritional status of adolescent girls with respect to education-level of their fathers and mothers was analysed on the basis of BMI. On the whole, the analysis supported the fact that educated parents bred healthy children which could be seen in case of mothers who were graduates and above, and the data show that minimum percentage (18.54%) of under-nourished and 16.67 per cent of over-weighted adolescent girls also fell into this category whose mothers were educated up to graduation or above. On the other hand, it was also found that majority of the over-weight girls were from those families whose fathers were educated up to graduation or above (66.67%). Girls of illiterate, primary-educated and under-intermediate educated mothers suffered more in terms of malnutrition viz. most of them fell into underweight and overweight categories. (Table 4)

TABLE 4
DISTRIBUTION OF GIRLS BY THEIR NUTRITIONAL STATUS AND EDUCATION OF PARENTS

Literacy Status	Nutritional status according to Body Mass Index(BMI)						Test of Significance
	≤20 (Under Weight)		20.1- 24.9 (Normal)		≥ 25 (over weight)		
	No.	%	No.	%	No.	%	
Education of Father							X2= 14.151 df =14, p<0.01
Up to High school	68	33.17	18	21.68	-	-	
Intermediate	17	8.29	10	12.04	4	33.33	
Graduate & above	120	58.53	55	66.27	8	66.67	
Education of Mother							X2= 3.698, df = 4, p > .05
Up to High school	135	65.85	45	54.22	8	66.67	
Intermediate	32	15.61	16	19.28	2	16.67	
Graduate & above	38	18.54	22	26.51	2	16.67	
Total	205		83		12		300

From the study, it may be inferred that better the educational status of father, higher the incidence of healthy girls. The educational status of mother has an important role to play in raising the nutritional status of her children because she cooks the food and looks after her children. An educated woman understands the importance of various components of diet which she is going to prepare and serves to her children. Therefore, higher the education of the mother better is the nutritional status of the children. According to another study⁵, mother's education is strongly associated with nutritional status of adolescent girls.

Similarly, the occupation of parents was studied with respect to their nutritional status of adolescent girls. It was observed that parents in service had more normal girls in comparison to others. Maximum 26.67 per cent and 35.48 per cent of normal adolescent girls were seen in case of fathers who were working in the government and private sector respectively. Majority of the mothers of the sample respondents were homemakers. It has been observed that occupation variation of mothers could not be ascertained to be playing a significant role with regard to the health of their daughters though the nutritional status could not explicitly be explained by occupation of fathers only. The variation in dietary habits and unhealthy food habits have been noticed irrespective of occupation of father or mother which may be a reason of under-nourishment for the adolescent girls. (Table 5)

TABLE 5
DISTRIBUTION OF GIRLS BY THEIR NUTRITIONAL STATUS AND FATHER'S OCCUPATION

Occupation	Nutritional status according to Body Mass Index(BMI)						Total
	≤20 (Under Weight)		20.1- 24.9 (Normal)		≥ 25 (over weight)		
	No.	%	No.	%	No.	%	
Occupation of Father							
Govt. service	69	65.71	28	26.67	8	7.61	X2=28.17, df = 8, p < 0.005
Private service	40	64.52	22	35.48	-	-	
Business	48	66.67	22	30.55	2	2.78	
Professional	20	68.96	9	31.03			
Labour	28	86.67	2	13.33	2	6.25	
Occupation of Mother							
Govt. service	4	50	2	25	2	25	X2= 14.142, df = 4, p <0.01
House wife	191	67.73	81	28.72	10	3.55	
Others	10	100					
Total	205		83		12		300

CONCLUSION AND RECOMMENDATIONS

The present study revealed that low socio-economic status tends to affect the nutritional status of adolescent girl students. Though the number of normal girls was more in well-to-do families than girls belonging to other categories with poor socio-economic indicators; there was significant variation in the prevalence rate of normal girls between low and high socio-economic groups. Similarly, when educational status was taken into consideration, the obvious result was that better educated mothers were having less under-nourished and obese girls. Occupations of father had an important role to play in raising the nutritional status of adolescent girls as far as normal nutritional status was concerned. Caste and religion were also associated with nutritional status of adolescent girls as food habits are also practiced based on religion.

More research studies should be taken up to further explore the contribution of each of the socio-demographic factors influencing nutritional and health status of the adolescent girls. The findings of these research studies might suggest appropriate nutrient supplementation to improve it further. Educational campaign on the importance of health and nutrition is also essential to improve the awareness-level of the adolescent girls. Hence, appropriate measures must be initiated to introduce life-skill education in the school and junior-college curricula so that the students can practice healthy food habits paving lesser burden on the health-care infrastructure. Government schemes and development programmes must provide package of services to adolescent girls which would help them to become healthy mothers in future.

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ASSESSMENT OF ROUTINE IMMUNIZATION SERVICES IN TWO DISTRICTS OF THE STATE OF JHARKHAND (INDIA)

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ABSTRACT

Routine immunization is a fundamental service in India's public health care system and is regarded as one of the key indicators of the overall functioning of the health system. Therefore, assessing the immunization programme at the district-level is important for understanding the programme status and needs.

This paper assesses the routine immunisation programmes for children and the quality of immunisation services provided in Deoghar and Jamtara districts of Jharkhand. Programme management issues, immunization safety, recording and reporting practices and active tracking of beneficiaries are key aspects which need to be strengthened to improve the quality of immunization services in these two districts. The study highlights the need for focussed activities to strengthen immunization services in the districts. Quality of immunization services also needs special attention to have a positive impact on the overall coverage.

Keywords: Routine Immunization, Children, Supportive Supervision, Public Health, Programme Management

In a people-centric public health service, assessment of immunization services is important in analyzing the overall functioning of the public health care delivery system. Child immunization coverage is a good indicator of the accessibility and utilization of health care services. Moreover, differential achievements between states, rural/urban areas and socio-economic groups give important information about whether health sector policies have worked as desired and where sustained efforts are further required.

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Jharkhand state in India is a success story where sustained efforts have led to improved immunization coverage. Full immunization coverage (FIC) has improved from 8.8 per cent in the National Family Health Survey (NFHS-II) in 1998-'99 to 54 per cent in the District Level Household Survey (DLHS-III) in 2007-'08 and finally to 59.7 per cent in the Coverage Evaluation Survey (CES) 2009¹⁻³. Though the state has made considerable progress with regard to immunisation, the Santhal Parganas Division comprising the six districts of Dumka, Deoghar, Godda, Jamtara, Pakur and Sahebganj has much lower RI coverage as compared to the state coverage. As 21 per cent of the infants in the state is in these 6 districts, which have a bearing on the overall RI coverage in the state.

The Government of Jharkhand (GoJ) has, therefore, identified the Santhal Parganas Division as a prime focus area to improve RI services in the Programme Implementation Plan (PIP) for 2010-'11⁴. Development partners are committed to this endeavour and are working closely with the GoJ in these 6 districts.

Maternal and Child Health Integrated Programme (MCHIP) is a major maternal, neonatal and child health program of the United States Agency for International Development (USAID), working in India and other countries to accelerate the momentum to attain the Millennium Development Goals (MDGs) 4 and 5⁵. MCHIP works at the national level and has been providing technical assistance (TA) to the GoJ at the state level and in the focus districts of Deoghar and Jamtara. At the district level, MCHIP offers TA to the district health teams and partner agencies for strengthening RI service delivery to raise the quality of services and to sustain the immunization coverage.

OBJECTIVES

An assessment of immunization services was undertaken in both the districts to provide a baseline information before initiating technical assistance in the two districts to measure the impact of the interventions with the following objectives:

- (i) To evaluate the coverage of vaccines under UIP (Universal Immunization Programme) in the two MCHIP focus districts in Jharkhand;
- (ii) To assess the factors influencing infant immunization coverage;
- (iii) To determine whether disparities in immunization coverage exist; and
- (iv) To assess the quality of immunization services at the facility level and session site level.

METHODOLOGY

The situation analysis exercise included two broad components:

- Immunization Coverage Evaluation using the standard WHO 30x7 cluster sampling methodology⁶.
- Assessment of quality of Immunization Services at all the sub-district block-level cold chain points and at two session sites under each cold chain point through Supportive Supervision (SS) Exercise⁷.

The quality of immunization was assessed through the supportive supervision exercise for routine immunization services. Under this, two different structured checklists, one each for health facilities and immunization session sites was used to assess various components of immunization services. At the health facility-level, services assessed were divided into four broad areas: programme management, cold chain, recording and reporting, and immunization safety. Similarly, at the session site level, thematic areas studied were micro-plan and cold chain, injection safety, recording and reporting and waste disposal. The checklists were used to find out whether the relevant activities are being undertaken or not followed by feeding of data through a computer software that generates scores for each of the variables.

Sample Size and Sampling Technique

For evaluating the immunization coverage, children aged 12-23 months were included in the current study. As the survey exercise was conducted during 1st-3rd February 2010, children with a date of birth between 1st February 2008 and 31st January 2009 were included. Also, since the survey was conducted to reflect the most recent performance of the immunization system, the youngest child in the specified age group in the identified household was included in the study. Thus, only one child from each household was included in the survey. A child was considered 'fully immunized' if he/she had received one dose each of BCG and measles and three doses each of DPT and polio (excluding polio birth dose— OPV) by the first birthday. Those who had missed any one vaccine out of the six primary vaccines, were described as 'partially immunized (PI)', and those children who had not received any vaccine up to 12 months of age were defined as 'unimmunized'⁸.

As the FIC coverage evaluated earlier (DLHS 3) was more or less similar and since the district level support was going to be provided to both the districts through one technical consultant, both districts were considered together for the 30

clusters. The standard procedure for selecting clusters was followed⁶ and the final list included 19 clusters from Deoghar and 11 from Jamtara.

Survey and Data Entry Tool Designing and Pretesting

Survey and data entry tools were developed by the MCHIP team. The tools were shared with various stakeholders and further refined, as required. The survey tools were pre-tested before the final survey. MS Excel-based data management tools were also developed and were pre-tested by entering data collected during the pre-test of the survey tools.

Survey Team Recruitment and Orientation

Six National Polio Surveillance Project (NPSP) external monitors with previous Supplementary Immunization Activity (SIA) experience were engaged as Field Coordinators (FC) for the field level activities. Consultants from partner agencies and MCHIP provided supervisory support to the FCs during the survey. A one-day orientation workshop was organized for the FCs and supervisors to orient them on topics relevant to the field survey. Pre-testing of the tools was done by the FCs under their respective supervisors.

Field Implementation

Under each cluster, the geographical center was selected as the starting point. The first house in a given direction was pre-identified using computer software. The next household selected was the one nearest to the first one i.e. the one which could be reached in the shortest possible time on foot. If there were two households in equal distance, the one on the right in front of the currently visited house, was selected. Pre-designed and pre-tested interview schedules were used to interview the participants in households with eligible children.

For quality of immunization services, all the sub-district cold chain points were visited and evaluated using the SS checklist for facility assessment⁷. Two randomly selected session sites under each block were also visited for evaluating RI services at the field level. This was done using SS checklist for session sites⁷. Thus, a total of 8 facilities and 16 session sites in Deoghar and 4 facilities and 8 session sites in Jamtara were visited during the survey.

Data Analysis and Quality Control

Data entry was done by the MCHIP team in the pre-designed Excel formats. The

following three-stage quality check mechanism was instituted:

- Every format submitted by the FCs was scrutinized at survey focal point; most of the errors and omissions could be corrected at the submission point.
- In-built checks and balances were introduced in the data entry tool at the time of development.
- 10 per cent random check of entered data against actual forms.

The data analysis was conducted by the MCHIP team. Tests for statistical significance (Chi Square/Fisher's Exact) were applied to selected observations.

FINDINGS

Infant Immunization

Out of the total 210 children surveyed, 66.3 per cent was from Deoghar and the rest (36.7%) was from Jamtara. Among the children, 86.7 per cent of them belonged to rural areas, 71.9 per cent were Hindus and 34.8 per cent belonged to the SC (Schedule Caste)/ST (Schedule Tribe) population sub-groups. 57.6 per cent of them had birth order 1 or 2, 20 per cent of birth order was 3 and 22.4 per cent of birth order was 4 or more. Mothers of approximately 58 per cent of the surveyed children were illiterate whereas only 2.9 per cent of the surveyed children's mothers had studied beyond class 10.

Overall, 51 per cent of the surveyed children were found to be fully immunized. In receiving various antigens, 82.4 per cent of the sampled children had received BCG vaccination; 81 per cent, 69.5 per cent and 59 per cent had received DPT1, DPT2 and DPT3 doses respectively; while 56.7 per cent was immunized with measles vaccine. 14.3 per cent of the children were completely unimmunized and 34.7 per cent partially immunized.

Unimmunized/Partially Immunized Children

Of the 30 unimmunized children, 67 per cent of them were females, 87 per cent were born at home, 64 per cent were of birth order 3 or more and 57 per cent of them belonged to the OBC (Other Backward Classes) group. Being unaware of the need for immunization (64%) and fear of adverse events (20%) were the major factors for the child remaining unimmunized. Other reasons for the child remaining unimmunized were rumours, the mother being busy, the distance to the session site and the lack of faith in immunization services. Of the 34.8 per cent of the PI children, the major reasons for not completing immunization were

fear of adverse effects (18%), lack of information about the next due date for vaccination from the health staff (18%), being unaware of the need for returning for complete immunization (16%), and the mother being too busy to take the child for vaccination (15%). The other contributing factors were the child being ill, delaying vaccination for another time, and rumours and misinformation regarding contraindications.

Dropout rate (DPT1-DPT3) of 27.1 per cent was observed in the present study. Dropout rates were higher in OBC (32.0%) and SC (31.9%) population groups when compared to the overall dropout rates. When evaluated in relation to the place of immunization, higher dropout rates were noted for immunization sessions performed at government health facilities (38.9%) in comparison to outreach session sites through the government system (26.1%) and private health facilities (25%).

The majority of immunization services for all the antigens were being performed at outreach session sites. The study findings revealed low hospital/Primary Health Center (PHC) immunization rates for all antigens including BCG (13.3%) and OPV zero dose (7.6%) vaccination.

Of the 180 children who had received at least a single dose of vaccine, 59.4 per cent had immunization cards. There were disparities in the availability of immunization cards. It was observed that card availability was more for male children, non-Muslims and children with literate mothers. Children with cards were more likely to be FI (67.8%) as compared to children without immunization cards (43.5%); the association being statistically significant ($p=0.002$, $OR=2.73$, 95% $CI=1.38-5.40$).

Differentials in Immunization Coverage

Female children were more likely to be unimmunized (19.4%) as compared to male children (9.3%), the difference being statistically significant ($p<0.05$, $OR=2.34$, 95% $CI=0.98-5.90$). The study revealed that 33.3 per cent of the Muslim children did not complete their immunization as compared to 8.6 per cent of the Hindu children ($p<0.001$, $OR=5.31$, 95% $CI=2.17-13.03$). As compared to OBC and SC population groups, ST and others had better FI rates ($p=0.001$, $OR=2.58$, 95% $CI=1.43-4.69$). Children born at institutions were more likely to complete their immunization as compared to those born at home ($p=0.003$, $OR=2.47$, 95% $CI=1.33-4.61$). A statistically significant association was found between higher birth order and likelihood of not getting immunized; 29.8 per cent of the children having birth order of four or more were found to be unimmunized as compared to 10.5 per cent children with birth order one ($p=0.002$, $OR=3.63$, 95% $CI=1.47-8.80$). Similarly,

children of literate mothers were more likely to be fully immunized (70.5%), as compared to illiterate mothers (36.9%) ($p<0.001$, OR=4.08, 95% CI=2.18-7.68). The study showed that the effect of Inter-Personal Communication (IPC) was very important in determining whether a child had been immunized. Children who have had two IPC contacts had complete immunization rates of 71.9 per cent as compared to children with one IPC contact and no IPC contact; where the FIC rates were 38.5 per cent and 25 per cent respectively; the difference being statistically significant ($p<0.001$, OR=4.99, 95% CI=2.43-10.32). No significant disparities were observed in relation to the place of residence. (Table 1)

TABLE 1
DIFFERENTIALS IN INFANT IMMUNIZATION COVERAGE

Particulars	Fully Immunized	Partially Immunized	Unimmunized	p
Gender				
Males (n=107)	53.3%	37.4%	9.3%	<0.05
Females (n=103)	48.5%	32.1%	19.4%	
Religion				
Hindus (n=151)	53.0%	38.4%	8.6%	<0.001
Muslims (n=51)	39.2%	27.5%	33.3%	
Christians (n=8)	87.5%	12.5%		
Social Category				
Scheduled Tribes (n=18)	66.7%	27.7%	5.6%	0.001
Scheduled Caste (n=55)	47.3%	47.3%	5.4%	
Other Backward Classes (n=71)	40.8%	35.2%	24.0%	
Others (n=66)	60.6%	25.8%	13.6%	
Birth Place				
Institution (n=107)	64.9%	29.9%	5.2%	0.003
Home (n=133)	42.9%	37.6%	19.5%	
Birth Order				
First (n=67)	53.7%	35.8%	10.5%	0.002
Second (n=54)	66.7%	25.9%	7.4%	
Third (n=42)	50.0%	38.1%	11.9%	
Fourth (n=47)	29.8%	40.4%	29.8%	
Literacy Mothers				
Literate (n=88)	70.5%	25.0%	4.5%	<0.001
Illiterate (n=122)	36.9%	41.8%	21.3%	
Interpersonal Communication				
Two messages given (n=121)	71.9%	28.1%		<0.001
One message given (n=39)	38.5%	61.5%		
No message given (n=20)	25.0%	75.0%		

Quality of Immunization Services (Tables 2 and 3)

Programme Management

A number of programmatic issues were highlighted during the present study, both at Deoghar and Jamtara. The major areas of concern were irregular block meetings and fewer supervisory visits at facility and session sites. Other components of programme management like estimation of beneficiaries and logistics were being implemented in Deoghar but needed further strengthening. At Jamtara, all aspects of programme management were lacking and need to be prioritized (Table 2).

TABLE 2
SUPPORTIVE SUPERVISION FINDINGS AT HEALTH FACILITIES

Parameter	Deoghar	Jamtara
Programme Management		
Estimation of Beneficiaries and Logistics	63%	25%
Block meeting conducted	50%	0%
Supervisory visits	63%	0%
Sessions conducted as planned >80%	88%	0%
Cold Chain		
ILRs & DFs connected through Stabilizers	88%	50%
Temperature Log Books for all ILRs & DFs	63%	100%
Twice daily monitoring of temperature	88%	100%
Record of power failures/cuts	13%	50%
Record of Defrosting ILRs & DFs	25%	25%
Periodic checks of Temperature Log Books	63%	75%
Functional thermometer in ILR and DF	88%	75%
Correct temperature recordings in ILR and DF	81.5%	87.5%
No frost OR frost <5mm in ILR / DF	81.5%	87.5%
Vaccine vials correctly arranged	75%	75%
No T-series vaccines in bottom of ILR	75%	75%
No items other than vaccines in ILR	75%	100%
Vaccines in ILR within expiry dates and with labels, OPV VVM in usable stage	88%	100%
No reconstituted BCG & Measles vials in ILR	88%	100%

Parameter	Deoghar	Jamtara
Diluents placed in ILR 24 hrs before distribution	63%	75%
No RI vaccines in DF	88%	75%
Immunization Supplies and Sessions		
Vaccine issue register matches Stock Register	50%	25%
All sessions issued at least 1 vial of each antigen	57%	50%
Updated records for ADS & Reconst syringes	57%	75%
Immunization Safety		
Availability of sharp disposal pit	50%	25%
Immunization waste chemically disinfected	13%	0%
Disposal pit used for disposal of sharps	38%	25%

Overall Cold Chain (Health Facilities and Session Sites)

Overall, cold chain services were satisfactory in both the districts. For example, ice-lined refrigerators (ILRs) and deep freezers (DFs) were kept away from direct sunlight, walls and other equipment, temperature log books for ILRs and DFs were maintained and routine monitoring of daily temperature was undertaken at survey sites. Neither district was maintaining proper records of defrosting ILRs or power cuts, nor were they conducting periodic checks of the temperature log books. During immunization sessions at Deoghar, the concern was that in only 40 per cent of the session sites, one ice pack was taken out to keep reconstituted vaccines. At Jamtara, all aspects of conducting an immunization session need to be strengthened, including the need to take out an ice pack to keep reconstituted vaccines as well as ensuring that diluents are available (Table 3 and Figure 1)

TABLE 3
SUPPORTIVE SUPERVISION FINDINGS AT SESSION SITES (RECORDS AND REPORTS, IPC AND COMMUNITY MOBILIZATION)

Parameter	Deoghar	Jamtara
New cards and counterfoils for each new beneficiary	81%	75%
Information correctly and completely filled in cards and counterfoils	94%	75%

Parameter	Deoghar	Jamtara
Information correctly and completely filled in immunization registers	88%	38%
Proper filing of counterfoils in tracking bags	81%	50%
EACH known pregnancies and births added to AWW AND ANM register	0%	25%
AWW/ Other Mobiliser shared list of due children with ANM	0%	25%
Active tracking for dropouts using due list	0%	13%
ANM giving 4 key messages	31%	13%
Presence of Anganwadi worker	88%	63%
Presence of ASHA/Link Worker/Mobilizer	69%	75%
Supervisory Visits by District/Block Level MO	56%	13%

Immunization Supplies and Sessions

Other findings included a disparity in vaccine issue registers and stock registers and all sessions not being issued at least one vial for all antigens. Findings given in Table 2 reflect that in Deoghar, more than 80 per cent of the district sessions were conducted as planned (as assessed by the SS checklist); whereas in Jamtara, 66 per cent of the planned sessions had been conducted in the month preceding the survey.

Immunization Safety

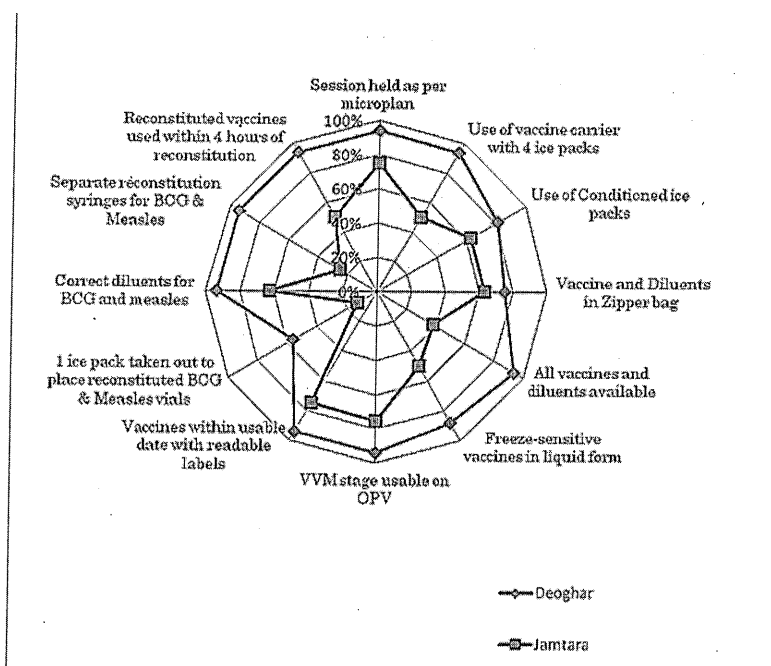
Findings in Table 2 and Figure 2 state that injection safety practices were compromised at every level. This was in part due to unavailability of hub cutters and other needed materials (such as hypochlorite solution, double buckets and proper pits).

Recording and Reporting

In Deoghar, recording and reporting were properly carried out with the exception of proper completion and filing of counterfoils of immunization cards in tracking bags. In Jamtara, new cards were issued to 80 per cent of the beneficiaries but records and reports were not being properly maintained, including proper and complete filling of information in cards and registers and proper placement of counterfoils in tracking bags (Table 3).

FIGURE 1

MICROPLAN AND COLD CHAIN AT SESSION SITE



Tracking Left-outs/Drop-outs and Missed Opportunities

Table 3 shows that tracking of drop-outs and left-outs (infants and children who have never utilized immunization services) was a major problem in both Deoghar and Jamtara, with active tracking of drop-outs not being done and mobilizers not sharing lists of children due to be vaccinated with the Auxiliary Nurse Midwife (ANM).

IPC and Community Mobilization

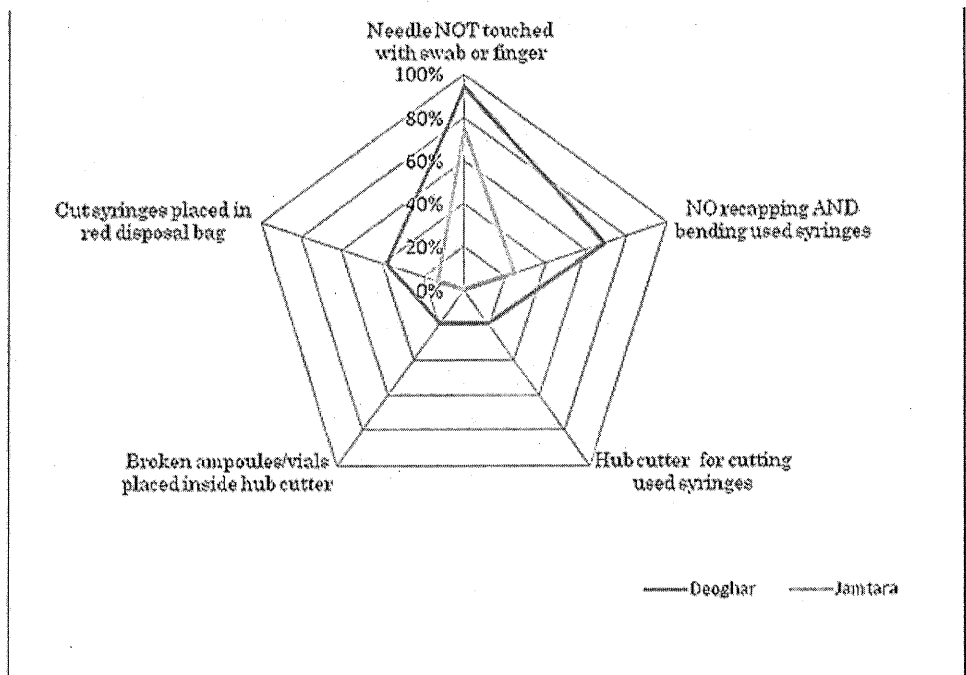
Though an Accredited Social Health Activist (ASHA) was present at 76 per cent of the session sites visited; but the four key messages were administered to beneficiaries at only 29 per cent of the session sites (Table 3).

DISCUSSION

The study findings reveal FIC to be 51 per cent for the two combined districts, which is similar to that obtained in DLHS-III for Jharkhand state² but much less

FIGURE 2

INJECTION SAFETY AT SESSION SITE



than the latest CES estimates³. Immunization coverage in the Santhal Parganas Division is, therefore, considered to be less than the overall state coverage and needs focussed efforts to improve coverage.

The highest coverage in the present study was for BCG (82.4%) while measles vaccination coverage was the lowest, estimated to be 56.7 per cent. This drop in immunization coverage from BCG to Measles has been documented not only in some earlier studies⁹⁻¹¹ but also from various data sources available at national, state and district levels¹⁻³. This clearly reflects that despite concerted efforts to improve immunisation coverage, the problem of dropouts still persists. The study found a dropout rate of 27.1 per cent from DPT1 to DPT3; and 25.7 per cent for BCG-Measles as compared to an acceptable dropout rate of 10 per cent for immunization services, which points towards service utilization gaps by the community as a whole. Similar dropout rates have been reported by some other studies conducted earlier in different parts of the country^{9,12}. Poor service utilization suggests that the community lacks awareness on the importance of completing primary immunization or does not prioritize this. Poor quality of RI services, rumours and false perceptions regarding RI and the presence of cultural and social barriers are also contributing factors for high drop outs.

Other reasons for the dropouts included fear of AEFI (Adverse Events Following Immunization), rumours, lack of information about the next due date, unaware of the need for completing all vaccinations, sickness of the child, the mother being too busy to take the child for vaccination. All the reasons are similar to those found in some earlier studies¹²⁻¹⁴. The problem of dropouts is suggestive of missed opportunities and poor community linkages with services. The study revealed that four key messages¹⁵ were not being provided to the beneficiaries following vaccination, resulting in their lack of awareness about the next due date for vaccination. Also, their queries about AEFI and rumours were not answered. IPC and improvement in quality of services can address these issues. Special focus is required to strengthen capacity building of ANMs (Auxiliary Nurse Midwives), AWWs (Anganwadi Workers) and ASHAs (Accredited Social Health Activists) in relation to behaviour change communication (BCC) and IPC skills. Similarly, proper due listing of the beneficiaries and use of counterfoils, keeping the MCH register updated, house to house visits by ASHAs to remind the community and caregivers of session days and good inter-sectoral coordination between Ministry of Health and ICDS (Integrated Child Development Services) department are needed. As per the findings of some other studies elsewhere¹⁶⁻¹⁸, a statistically significant association was observed between availability of immunization cards and the probability of being FI. Availability, provision and information on immunization cards can serve as reinforcement for mothers and the family on the continued need for immunization. Organizing regular review meetings at district and sub-district levels with active participation of officials from both the departments should also be held on a regular basis. These efforts can improve RI coverage as well as can benefit other health aspects.

Although access (as reflected by BCG and DPT 1 coverage rates) to immunization services was a problem in Jharkhand and particularly in the Santhal Parganas Division¹, the present study and the state level data³ show that access has improved considerably since the DLHS II findings. The present study revealed that 14.28 per cent of the children were unimmunized. The major reasons were lack of awareness about the need for immunization and distance of the session site from the home. Similar findings have been reported in earlier studies as well¹². This reflects a problem of access and specifies the need for community mobilization, involvement of local opinion makers and focussed Information, Education and Communication (IEC) activities before immunization sessions. Also, a comprehensive micro-plan for each HSC (Health Sub-Center), PHC (Primary Health Center) and CHC (Community Health Center) should be prepared covering all the geographical areas under the defined health facility with specific plans for hard-to-reach areas (HRA). All planned sessions are to be held, and if sessions are missed on due dates, then alternate plans need to be available and these

must be communicated to the target populations. All AWCs have been converted into session sites and immunization has been coupled with the Supplementary Nutrition (SN) component of the ICDS programme which has resulted in an improved coverage.

The study findings revealed that the majority of immunization sessions were performed in the outreach sites and coverage rates for BCG vaccination at hospitals (13.3%) and the 'OPV' zero doses (7.6%) were very low. Dropouts were higher for sessions performed at health facilities (PHC and CHC) (38.9%) as compared to the outreach session sites (26.1%). Although this dropout rate is less compared to some previous studies¹⁹, it serves as an indicator that poor quality services at health institutions may have an adverse effect on subsequent child immunizations. Provision of cash incentives for institutional deliveries through the Janani Suraksha Yojna (JSY) by the Government has resulted in a considerable increase in the number of institutional deliveries. This should have a positive impact on BCG and OPV zero dose vaccination at the health facilities with all the children born at the health facilities vaccinated with BCG and OPV zero dose before discharge. It is also an opportunity to provide a data base for children born in hospital settings who can later be tracked for subsequent vaccinations and other health services. Additionally, an increase in OPV zero dose coverage will benefit polio eradication efforts in the country.

As noted previously, the study revealed higher immunization rates for the ST population group, which differs from some previous studies^{12,20}. This may be because of the small number of ST population in the study or indicative of greater receptivity to the services. However, the current study showed poor immunization coverage among female children, Muslim and OBC children, children born at home, children of higher birth order and children with illiterate mothers. Similar findings have also been reported by some studies in India and other countries,^{11,12,17,18,21,22} particularly the effect of the mother's literacy status on FIC^{20,22}. Female children, children born at home and children of higher birth orders are generally not benefitting from the health care system. This points towards the need for focused activities with these mothers, including optimizing post-natal care (especially women delivering at homes) and also increasing the involvement of the ICDS department, self help groups (SHGs) and Mahila Mandals to generate awareness about immunization. Incorporating immunization-related services during ante-natal care (ANC) services can also be undertaken to improve the immunisation coverage. To reduce social exclusion or mistrust of services among OBC and Muslim communities, focussed IEC campaigns and awareness drives are needed to better link with these population groups.

Some additional service quality issues need to be addressed. Although the overall cold chain was satisfactory at the health facilities, proper maintenance of temperature log books was not being done, records of power failure and defrosting were not entered, and the log book was not countersigned by the Medical Officer. These findings have been reported in earlier studies also²³. Proper maintenance of temperature records and cold chain are essential for optimizing the functioning of the cold chain system. This can be ensured with the regular monitoring by the Medical Officers. Repeated refresher trainings and regular monitoring of session sites are needed to maintain quality of services and to provide on-the-job training and on-site corrections as and when required. Accordingly, the PHC staff should ensure that vaccines, supplies and ice packs reach the sites in good working condition.

Immunization safety is also an important area of concern. WHO estimates that at least 50 per cent of all injections administered in India are unsafe, posing risks to the beneficiaries, workers and the community²⁴. The introduction of AD (Auto Disable) syringes has improved the safety factor but proper disposal of immunization waste needs to be looked into further. Findings from this and earlier studies²⁵ reveal that ensuring adequate injection safety and waste disposal mechanisms at health facilities and session sites (e.g. ensuring availability of hub cutters) are mandatory so that waste can be appropriately collected from session sites and disposed off at the health centers.

The present study has its limitation that it was conducted in only 2 out of 24 districts of Jharkhand. To identify the core issues related to routine immunization, similar studies can be undertaken in other districts also. However, the issues identified affect almost all the districts of Jharkhand and other states in India with low immunization coverage and hence, can be used by programme managers to improve the immunization service delivery.

CONCLUSION

Worldwide childhood immunization saves around 3 million lives every year. It is estimated that every rupee invested on vaccines saves more than seven times the medical costs and 25 times the overall costs related to vaccine-preventable diseases, making it the most cost-effective health intervention²⁴. The present study highlighted various issues related to RI services and how these can be addressed, including through SS. Programme management improvement, ensuring adequate supervisory visits at health facilities and session sites, and regular inter-departmental review meetings will have a positive impact on the RI services. Estimation of beneficiaries, conducting sessions as planned, improved

stock management, logistics and distribution for vaccines and syringes will reduce missed opportunities. A well-prepared micro-plan and proper vaccine management will ensure that these practices are corrected. Such focussed and concerted efforts should continue to further consolidate the success achieved till date and ensure optimal delivery of RI services to the community as a whole in the future.

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STRESS MANAGEMENT IN ADOLESCENTS

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ABSTRACT

This paper deals with stress management in adolescents. Stress is a physiological reaction to outside and inside stressors. When that reaction exceeds the capacity of a particular adolescent to respond comfortably; mentally (emotional and behavioural), physically and socially, then it becomes a problem and needs management. Initially, personal capacity needs to be addressed, and then group and community should be empowered to accommodate extremes of reactions. In these situations, schools, colleges, communities, sport clubs and other social groups play a significant role. At the personal level, repeated practicing of life skills leads to a certain mastery and application of such skills to real life situation and gain control over the situation to de-stress oneself. These skills improve the positive health and self-esteem of adolescents.

Keywords: Stress, Adolescents, Signs and Symptoms, Life-skills

Adults commonly tell adolescents that the teenage years are the best years of their life. The rosy pictures reminiscence happy groups of high school students energetically involved in a dance or sporting event, and bright-eyed adolescents holding hands and enjoying their togetherness or sipping tea at a local stall. This is only part of the picture. Life for many young people is a painful tug of war filled with mixed messages and conflicting demands from parents, teachers, coaches, employers, friends and oneself. Growing-up is negotiating a path between independence and reliance on others; it is a tough business. It creates stress, and it can create serious depression among young people; generally ill-equipped to cope, communicate and solve problems.

Stress is defined as the adverse relation of the people to excessive pressure or other types of demand placed on them¹. Stress occurs when pressure overpowers one's perceived ability to cope (Centre for Stress Management, 2004). Stress can also be defined as a process in which environmental demands strain in organism's adaptive capacity resulting in both psychological as well as biological changes

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that could place a person at risk for illness². Stress is characterized by feelings of tension, frustration, worry, sadness and withdrawal that commonly last from a few hours to a few days. Stress may be beneficial or dangerous. A stressor is any stimulus which evokes a stress response. Stressors may be acute or chronic, real or imagined, internal or external. These stressors can be divided into two major types:

- a) **Eustress:** It is positive and motivating, as shown by one's confidence in the ability to master a challenge or stressor. This type of stress may actually enhance the feeling of well being.
- b) **Distress:** It is a negative emotion and requires mental energy which leads to exhaustion, such a condition that occurs in response to a threat or challenge.

The presence of conditions like depression, anxiety and stress among adolescents is a matter of great concern. Depression in this population has been shown to be associated with increased risk of suicidal behaviour, homicidal ideation, tobacco use and other substance abuse in adulthood³. It has been noted that a majority of suicides in India are by those below the age of 30 years and also around 90 per cent of those who die because of suicide, have a mental disorder⁴.

Common Causes and Responses to Stress

While it's not always easy to recognize when adolescents are stressed-out; short-term behavioural changes such as mood swings, acting out, changes in sleep patterns, or bedwetting can be the indications. Some adolescents experience physical effects, including stomachaches and headaches. Others have trouble concentrating or completing schoolwork. Some others keep themselves isolated, lonely and become withdrawn or spend a lot of time alone. These events are centred on the two most important domains of a teenager's life- home and school. They relate to issues of conflict and loss. Loss can reflect the real or perceived loss of something concrete such as a friend or money, and it can mean the loss of such intrinsic things as self-worth, respect, friendship or love. Stress can be due to pressure from teachers, coaches, poor grades and homework, strained relationship with classmate, fear of failure, unclear and unreasonable expectations, etc. Lack of family routines, over-scheduling, prolonged or serious illness, poor nutrition, change in the family situation, family abuse, strained relationship with the parents or between parents, heated arguments with the parents, financial problems in family, tragedy in family like divorce, death, diseases, high crime rates in the living environment, alcohol or drug abuse in the family, moving to new surroundings and high expectations from the parents.

Stress can also be due to change of schools, having to deal with the bully, fitting in with the crowd or moving to the new community. Pressure caused by the expectation from self, low self-esteem, negative feelings about self, physical and biological changes in the body during adolescence, learning disabilities or mental/physical disabilities lead to stress.

Prevalence of Stress

Stress has ranked as a top health concern among the young, according to the fifth annual survey in the United States⁵. The number of children diagnosed with mental health problems has increased significantly over the past three decades⁶. Recent studies have found that as many as 20 per cent of the children in the United States show symptoms of a psychiatric disorder in which stress is a major contributor⁶. Similar findings have been seen in a study done in Brazil involving a total sample of 883 children where 27.2 per cent of children who were over 10 years and 18.2 per cent of 14 year old children showed a significantly higher prevalence rate of stress⁷. In another study, it was found that depressive symptoms were present in 18.5 per cent, anxiety in 24.4 per cent and stress in 20 per cent of the college population². It showed that girls had more stress than boys which is contrary to the findings of an Indian study⁸. In another study, it was found that 45.8 per cent of the samples had psychological problems, half of them perceived problems in their role as students, 45 per cent reported academic decline, 8.82 per cent of the students reported that life was a burden, 6 per cent reported suicidal ideas and 0.39 per cent of the students reported suicidal attempts⁹.

In a study conducted in Kerala to detect the prevalence rate of stress among school students indicated that 93 to 100 per cent of them in the age group of 4-17 years showed medium to moderate stress while 1.9 per cent was found to have severe stress. Only 1.79 per cent of them came under the normal group. The authors suggested that in every age, more than 90 per cent of the school children were facing above normal levels of stress and tension¹⁰.

A group of 460 adolescents (220 boys and 240 girls), aged 13-17 years were taken as subjects in a study through a multi-stage sampling technique in Kolkata. Findings showed that 20.1 per cent of the boys and 17.9 per cent of the girls were suffering from high anxiety. More proportion of boys had anxiety than the girls. Adolescents from Bengali medium schools had more anxiety than their English medium counterparts. Adolescents belonging to the middle class (middle socio-economic group) had more anxiety than those belonging to high and low socio-economic groups. Adolescents with working mothers were found to have more

anxiety¹¹. The findings of a Karnataka study on adolescents studying in XI and XII classes have revealed that the adolescents with high emotional maturity have significantly higher stress-level and self-confidence when compared to those with low emotional maturity¹².

There is a wide variation in the prevalence rate of depression among children attending the child psychiatry clinics in India and abroad. Three to six per cent of the children who attended child psychiatry out-patient clinics in Delhi were found to have depression^{13,14} while out-patient clinic based studies abroad have reported a much higher prevalence rate of 35 per cent^{15,16}. Even though depressive disorders among children are now recognized as a distinct entity, only a few Indian studies are available on the subject. Depressive disorders among children are often associated with poor psychosocial and academic functioning, increased risk of bipolar disorder, substance abuse and suicide¹⁷. Hence, it is important to identify and treat depressive symptoms in children at the earliest.

Signs and Symptoms of Stress

The first step is to be aware of the signs and symptoms of stress which may be mild, moderate or severe. Signs and symptoms are better classified on the basis of their nature such as physical, emotional or behavioural.

Common physical signs and symptoms of stress

These signs and symptoms include rapid heart rate, nausea and/or vomiting, dizziness, tremor, increased perspiration, headaches, muscle twitching, thirst, weakness, fatigue, grinding teeth, visual difficulties, and non-specific body complaints.

Common mental signs and symptoms of stress

Poor concentration, loss of self-confidence, memory impairment, increased or decreased awareness of one's surroundings, difficulty in decision-making, blaming others, difficulty in identifying familiar objects or people, racing thoughts, and disturbed thinking are covered under this category.

Common emotional signs and symptoms of stress

These signs and symptoms are apprehension, uncertainty, fear, agitation, anxiety, severe panic, anger, feeling overwhelmed, irritability, hopelessness, emotional shock, inappropriate emotional response, guilt, grief, and depression.

Common behavioural signs and symptoms of stress

The common behavioural signs and symptoms are change in activity levels, sleep disturbances, erratic movements, change in usual style of communication, loss of interest in previously pleasurable activities, change in eating and sleeping habits, emotional outbursts, anti-social behaviour, inappropriate use of humour, suspiciousness, substance use (e.g. caffeine, nicotine or alcohol use), deterioration in performance, accident proneness, nervous mannerisms (e.g., foot tapping, nail biting, teeth grinding, hair pulling, handwringing, etc.)

Today stress levels among children have been going up dangerously due to the pressure of their academic or co- and extra-curricular activities. Not all children can cope up with such high levels of expectation and parents do not seem to realize or accept that their children are under severe pressure. Stressed out and negligent parents, high expectations in academic or other activities, abused or deprived childhood, growing-up tensions and demand for familial responsibilities are the main causes of childhood and teenage stress.

Stress-induced fears and anxiety is associated with failure in academic and other activities, and lack of confidence. Adolescence-phase is truly the years of creativity, empathy, idealism and with bountiful spirit of adventure. Thus, if nurtured properly, adolescents can be moulded and mobilized to contribute significantly to the national development.

Stress Management

While we can't completely eliminate the stressors that children face, there are things we can start doing today enabling our children to cope-up with stress in a better way. It's both wonderful and important to teach our children about stress management. Teaching children with coping techniques now can not only help relieve stress in them but also it will make and feel them happier, healthier, and less stressed adulthood. It will equip them with the skills to manage the stresses they will inevitably face in future. Stress management is a very individual process and there is no single technique as the best stress management technique. Stress can be prevented at primary, secondary and tertiary levels. These levels of prevention of stress are as follows:

1. Techniques to avoid exposure to the stressor (i.e., primary prevention):

- (a) Avoidance of known stressors,
- (b) Cultivation of healthy personality traits and behaviours,
- (c) Identification and restructuring of cognitive distortions associated with

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- stressful events,
- (d) Planning and prioritization,
 - (e) Maintenance of good physical and mental health.
- (2) ***Techniques to minimize the level of stress arousal once one has been exposed to a stressor (i.e., secondary prevention):***
- (a) Minimization of the physiological arousal by using relaxation techniques and exercise,
 - (b) Verbalization,
 - (c) Support from others,
 - (d) Use of techniques to avoid exposure to stressors.
- (3) ***Techniques to reduce levels of stress arousal (i.e., tertiary prevention):***
- (a) **Catharsis:** A therapeutic technique whereby ideas, thoughts, fears, disappointments and suppressed materials are expressed to result in a state of relief in the individual;
 - (b) **Inspiration:** The process of experiencing a sense of optimism where one recognizes one's capacity to overcome challenges
 - (c) **Acceptance by others:** The individual comes to the realization that someone else understands, helping to ameliorate guilt;
 - (d) **Universalization:** The person comes to the realization that his or her experiences are not unique; and
 - (e) Use of techniques to avoid exposure to stressors and to minimize the level of stress arousal once one has been exposed to a stressor.

Some of the coping skills suggested for the prevention and management of stress are given below. However, none of them is effective if not done with good intention and faith. Besides physical exercises, there is a need of development of social and mental health.

Maintaining Good Physical and Mental Health

Researches have shown that persons with good physical and mental health are better equipped to face life's challenges. This is achieved through diet, exercise, relaxation, recreation, an appreciation for the arts and nature, and compliance with medication and follow-ups.

Exercise

Exercise is an effective treatment for stress. Laboratory studies indicate that exercise alters the way the body handles stress and it improves one's sense of well-being by release of endorphins or 'happy hormones'. Although all kinds of

exercises are useful; aerobic exercises such as brisk walking, jogging, cycling, skipping, swimming, aerobic dance, etc. should form the basis of any fitness programme since this type of exercise maintains an elevated heart rate. Exercise should provide a pleasant challenge and not result in fatigue or exhaustion. One should try to exercise 3-5 times a week for at least 20 minutes on each occasion. Benefits of exercise include- improvement in self-esteem and feeling of well-being, enhancing the chances of living longer, furthering the quality of life, reducing the feelings of depression and anxiety, building the endurance and muscle strength, enhancing flexibility and posture, helping in managing weight, and preventing and controlling type 2 diabetes (adult onset diabetes and other diseases).

Breathing exercises

The benefits of breathing exercises⁶ include providing more oxygen for the body, relieving physical and mental pain, keeping oneself in a deep state of relaxation, improving concentration and making more self-aware, enhancing physical and mental stamina, energy, vitality; relieving stress, providing sound sleep, developing a better response-capacity to stress; elimination of waste in the body; increasing flexibility; reducing physical and mental fatigue, relieving congestion and improving blood circulation.

Breathing exercise could be natural or abdominal or purifying.

In natural breathing one should develop an awareness of natural breathing pattern. Simple method of natural breathing is given below:

- Sit or stand straight.
- If possible, breathe through nose. While inhaling, fill the lower section of lungs.
- Notice how the chest raises and lower ribs expand.
- Hold the breath for a few seconds.
- Exhale slowly, allowing the abdomen to relax.
- When one has exhaled completely, the body will feel relaxed.
- Repeat this sequence at least five times.
- By raising the shoulders and collarbone during the inhalation, one will become more aware of the breathing process.

This has been found that 'belly breathing' is one of the most relaxing ways of breathing, in which lower portions of lungs are expanded to the maximum extent, while abdomen is allowed to relax and expand while inspiration. The raising of shoulders is avoided and expansion of abdomen is focussed so that diaphragm is brought to use.

Purifying exercise cleans the lungs while stimulating and toning the entire breathing process thus, refreshing the body. It may be used in conjunction with the other breathing exercises.

- Sit or stand straight.
- Inhale a complete natural breath, as described in the previous exercise.
- Hold this breath for several seconds.
- Exhale a little of the air with force through a small opening in your lips.
- Stop exhaling for a moment, then blow out more air.
- Repeat this procedure until you have exhaled all the air.

Diet

One should eat a balanced and varied diet. Some dieting tips are given below:

- Primarily, vegetarian diets with an abundance of fibre; and fresh foods are healthier.
- Eat more complex carbohydrates.
- Eat less salt, sugar, cholesterol and saturated fat.
- Eat smaller, more frequent meals.
- Drink lots of water throughout the day.
- Do not skip breakfast—this allows your blood sugar to fall which triggers a stress response.

Insights into the Concept of Stress

Other tips to be stress-free are given below:

- **Be humorous:** Whenever possible, enjoy a good laugh and above all, learn to laugh at yourself. It appears that laughter releases peptides in the brain, such as endorphins, which may help to account for the after-laughter feelings of well-being.
- **Everyone needs someone to talk to:** If friends or family are not available or seem unable to help when you need them, you may need to consider professional counselling.
- **Change your environment as much as possible when it is stressful to you:** Never see yourself as a helpless victim of circumstance. The steps to change your environment are usually not difficult. Identify the problem, think of alternatives, evaluate the alternatives and finally select and implement the best alternative.

Life Skills Education

Life skills are defined as the abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life¹⁹. UNICEF, UNESCO and WHO list ten core life skill strategies and techniques as: self-awareness building skills, critical thinking, problem solving, creative thinking, decision-making, interpersonal relationship skills, effective communication skills, empathy, managing feelings and emotions, and coping with stress.

1. **Self-awareness** includes recognition of one's 'self', of one's character, of one's strengths and weaknesses, likes and dislikes. Developing self-awareness can help one to identify the feeling of stress or being under pressure. It is also often a prerequisite for effective communication and interpersonal relations, as well as developing empathy for others. Self-awareness should be encouraged in the light of realizing self-worth/esteem and confidence.
2. **Critical thinking** is an ability to analyze information and experiences in an objective manner. Critical thinking can contribute to health by helping one to recognize and assess the factors that influence attitudes and behaviour, such as values, peer pressure, and the media.
3. **Problem solving** enables a person to deal constructively with problems in his/her life. Problems left unresolved can cause mental stress and physical strain.
4. **Creative thinking** contributes to both decision-making and problem-solving by enabling us to explore the available alternatives and various consequences of our actions or non-actions. It helps us to look beyond our direct experience, and even if no problem is identified, or no decision is to be made, creative thinking can help a person to respond most appropriately and adapt with flexibility to various situations/exigencies of our daily lives.
5. **Decision-making** helps us to deal constructively with decisions about our lives. Making an appropriate decision generates ripples of positive consequences for the health and well-being of oneself. It is most rewarding when health behaviours are modified during youth, when habits are still being learnt².
6. **Interpersonal relationship** skills help a person relate to the people surrounding him/her. This may mean being able to make and maintain friendly relationships which can be of great value to our mental and social well-being. It may also mean having good relations with family members, who are important sources of social support.
7. **Effective communication** means that we are able to express ourselves, both verbally and non-verbally, in ways that are relevant to the situation and culturally appropriate and acceptable. This means being able to express opinions and desires, but also needs and fears. And it may mean being able to ask for advice and offer help during times of need.

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8. **Empathy** is the ability to imagine a situation that another is experiencing despite possessing familiarity with that situation. Empathy can help us understand and accept others who may be very different from ourselves. Empathy can significantly improve one's social interactions, for example, in situations of ethnic or cultural diversity, it facilitates in relating people of various cultures and origins as well as being sensitive to their value systems¹⁸.
 9. **Managing feelings and emotions** includes skills to express feelings and emotions in a socially acceptable manner and essentially includes control and management of anger and stress.
 10. **Coping with stress** means that we take pro-active steps to reduce the sources of the stress, for example, by making changes to our physical environment or lifestyle. It also means learning how to relax so that tensions created by unavoidable stress do not give rise to health problems.

Stress is a physiological reaction to outside and inside stressors. When that reaction exceeds the capacity of a particular adolescent to respond comfortably; mentally (emotional and behavioural), physically and socially, then it becomes a problem and needs management. Initially, personal capacity needs to be addressed, and then group and community should be empowered to accommodate extremes of reactions. In these situations, schools, colleges, communities, sport clubs and other social groups play a significant role. At the personal level, repeated practicing of life skills leads to a certain mastery and application of such skills to real life situation and gain control over the situation to de-stress oneself. These skills improve the positive health and self-esteem of adolescents.

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RELATIVE IMPORTANCE OF SOCIO-ECONOMIC STATUS AND ACCESSIBILITY TO HEALTH FACILITY IN USING MATERNAL HEALTH CARE IN RURAL INDIA

Biplab Dhak*

ABSTRACT

This study investigates the determinants for seeking ante-natal care and institutional delivery in relation to low-level of maternal health care utilization; and its correlation with the socio-economic status of the users as well as their accessibility to the health centre. Using a nationally representative data set from the District Level Household and Facility Survey (DLHS-3), this study reiterates the low level of maternal health care utilization in rural India and shows a correlation with both various socio-economic factors and accessibility to health facilities. The findings reveal that socio-economic factors account a lot for utilisation of maternal health care than their accessibility to the health care facilities. Further, it has been observed that self-motivation fails to ensure women with maternal health care utilization unless they are motivated or permitted by their husbands or mother in-laws.

Keywords: Maternal health care, Socio-economic status, Accessibility, Motivating sources.

Attaining improved maternal health status has been the top most priority for the government of India since its first Five-year Plan (1951-'56) in order to reduce both maternal and child mortality¹. The target continued to reinforce year after year, and it has also been reflected in the Population Policy-2001 within the wider context of reproductive and child health programme, and through the commitment towards achieving the Millennium Development Goal 5 i.e. reducing maternal mortality by three quarters between 1990 and 2015².

Over the last few decades, although India has witnessed success in terms of reducing both maternal and child mortality, the level remains still very high as compared to any developed nation. Even after the decline of mortality ratio from 390 in 1990 to 230 in 2008³, India is still home to 63,000 maternal deaths a year which accounts almost one-fourth of the global maternal deaths. Similarly, child

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mortality rate in India is considered to be very high as compared to developed nations despite the fall from 33 during the period 1991-'92 to 18 during 2005-06^{4,5}.

Among other reasons, lack of proper maternal health care utilization has been marked as an important cause for the large number of maternal deaths⁶⁻⁸. In India, merely 18.8 per cent of pregnant women receive full ante-natal care (ANC) that covers three ante-natal check-ups, one tetanus injection and 100 iron acid folic tablets. Nearly three-fourth of deliveries continues to take place at home; most of these are performed without any assistance of a trained health worker⁹. There has also been a dropout of the spectrum of maternal health care utilization package. The proportion of women utilizing all forms of maternal health care services starting from ANC to institutional delivery is very less. It is seen that, while 75 per cent of the pregnant women use any type of ANC, institutional delivery rate ended up at merely 47 per cent⁹.

Various factors influence the rate of utilization of health care services. Health belief model¹⁰ suggests three sets of factors- individual perceptions, modifying factors, and likelihood of action which influence individuals to utilise health care facilities. Individual's perception on seriousness about the disease drives towards health care use; modifying factors comprising various socio-demographic characteristics play a key role in boosting or preventing individuals' interest in seeking health care; leading to the action of cost-benefit analysis between seeking health care or not. Studies on health seeking behaviour highlight a range of potential modifying factors which increase women's propensity to seek health care. The modifying factors comprise various socio-economic and demographic factors which enhance the demand for utilizing maternal health care services through mainly increasing economic ability to seek treatment¹¹⁻¹⁸.

Furthermore, several studies have stressed on the importance of access to and quality of health care services for increasing their utilization¹⁹⁻²². Programmes that maximize the quality as well as access to services enhance client satisfaction leading to a greater utilization²³⁻²⁵. Access helps determine whether an individual makes contact with the provider, while quality of care influences a client's decision whether to accept and continue using the services²⁶. Another important factor, from the supply side, is the cost of health care which is a significant barrier to service use^{27,28}.

OBJECTIVES

The objectives of this paper are to examine the:

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- (i) determinants of maternal health care utilization; and
 - (ii) relative importance of access to health care services, and the effect of socio-economic status in utilising maternal health care services.

METHODOLOGY

For this study, data were drawn from the District Level Household and Facility Survey-3 (DLHS-3) on Reproductive and Child Health (RCH) carried out during 2007-'08. It was designed to collect data at the district level on various aspects of health care utilisation for Reproductive and Child Health (RCH) and accessibility to health facilities by the users. DLHS-3 is a nationally representative survey collected through using multistage sampling design for all the districts across India (except Nagaland). In each district, 50 Primary Sampling Units (PSUs), census villages for rural areas and wards for urban areas, were selected at the first stage by systematic Probability Proportional to Size (PPS) sampling. Circular systematic sampling was adopted for the selection of households. Data were collected from 7,20,320 households. From these households, 6,43,944 ever married women aged 15-49 years were interviewed. This study uses information of rural areas covering 5,04,272 married women because data concerning distance to health facilities had not been collected for urban areas in the survey.

Analytical methods

The first step of analysis is calculating percentage of using maternal health care- any ANC, full ANC, and institutional delivery by age groups, and various socio-demographic variables. In the later part of the analysis, logistic regression models were carried out to understand the determinants of maternal health care utilization. For k explanatory variables and n number of individuals, the model expression is:

$$\log[p_i / 1 - p_i] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k$$

where P_i is the probability of occurring any particular event. In this study, dependent variables were: using any ANC or not; using full ANC or not; going for institutional delivery or not. α is the intercept, X_i ($i=1,2,\dots,k$) were the independent variables, and β were the slope for each independent variable.

Explanatory variables

The explanatory variables include demographic characteristics such as age; socio-economic characteristics such as religion, caste, women's education, husband's

education, working status and household wealth represented by an index made out of household assets.

Another explanatory variable is the distance to health centre from the place of residence. This variable indicates the accessibility to health care services by a woman.

FINDINGS

Maternal Health Care Utilization by Socio-demographic Status

Data given in Table 1 present the pattern of utilization of maternal health care services like seeking any ANC, full ANC and institutional delivery by the various socio-demographic variables of users. Expectedly, large variations were observed in using maternal health care services in relation to the socio-demographic indicators of the users. The utilization is found to be higher among the socio-economically well-off women. For example, women with higher education, belonging to higher household economic status and staying in urban areas; were found to be using more maternal health care services. The utilization is also found to be varying by age and caste such as the youngest age group (15-19 years) and the oldest (40-49 years) cohort in the reproductive age group used comparatively less maternal health care than the middle aged women (20-39 years). While 16.1 per cent of the women in the age group of 20-29 years availed of full ANC services, the figures stand at 12.9 and 6.6 per cent for the women in the age groups of 15-19 and 40-49 years respectively. Similarly, ST women used the least amount of health care services and facilities followed by SC and general caste women. But the same percentage (12.4) of both SC and ST women availed of full ANC services. It is worth mentioning that the education-level of both women and their husbands have a significant positive effect on the level of availing of all kinds of maternal health care services such as any ANC, full ANC and institutional delivery by the women irrespective of their age, caste, religion and other socio-demographic indicators. While only 70.7 and 06.5 per cent of the illiterate women availed of any and full ANC services respectively (94.2 and 38.5 per cent respectively for the women with an education level up to higher secondary and above). It has been found that as the education levels of the women and their husbands rise, there is an increase in the utilisation of all types of maternal health care services.

Women, who were working during the year preceding the study, utilised less maternal health services in comparison to the full-time home-makers. Wide gap has also been observed between the use of ANC and institutional delivery across any socio-economic group. For example, while 54.7 per cent of the woman belonging to the lowest wealth quintiles used any ANC, full ANC and institutional

delivery ended up in 6 per cent and 18.4 per cent respectively. Similarly, in the highest quintiles, while 92.2 per cent of women used any ANC, full ANC and institutional delivery were 32.6 per cent and 72.8 per cent respectively.

TABLE 1
**UTILIZATION OF MATERNAL HEALTH CARE IN RURAL INDIA BY VARIOUS SOCIO-
DEMOGRAPHIC VARIABLES**

Characteristics	Any ANC (%)	Full ANC (%)	Institutional Delivery (%)
Age			
15-19	74.7	12.9	43.5
20-29	73.6	16.1	40.7
30-39	62.4	11.8	29.6
40-49	47.7	06.6	18.8
Religion			
Hindu	70.6	14.6	38.5
Muslim	68.9	14.0	32.4
Christian	69.0	17.5	33.8
Others	72.2	13.4	44.0
Women's Education			
Illiterate	70.7	06.5	23.9
Below primary	70.1	12.3	30.7
Primary	80.9	19.0	47.0
Secondary	90.2	31.3	65.7
Higher secondary & above	94.2	38.5	76.5
Husband's Education			
Illiterate	66.5	05.0	16.3
Below primary	65.9	11.0	27.2
Primary	72.4	14.3	37.9
Secondary	79.1	20.5	49.9
Higher secondary & above	85.2	25.3	59.5
Caste			
ST	63.1	12.4	27.5
SC	69.4	12.4	35.6
Others	70.1	14.6	29.1
Working Status (Within last 12 Months)			
Worked	69.5	12.6	31.3

Characteristics	Any ANC (%)	Full ANC (%)	Institutional Delivery (%)
Not Worked	73.9	16.3	43.5
Household Wealth Quintiles			
1st	54.7	05.9	18.4
2nd	63.5	08.9	27.8
3rd	74.1	15.6	40.1
4th	83.9	22.9	54.5
5th	92.2	32.6	72.8
N= 275879			

Reasons for Not Adopting ANC and Institutional Delivery

Table 2 presents the percentage distribution of women who did not seek maternal health care for various reasons. Lack of awareness appears to be the most important factor for not seeking ANC. 53.4 per cent of women thought that ANC was not necessary, 20.4 per cent reasoned to unawareness, and 11.3 per cent thought that ANC is not customary. Cost is also found to be one of the important factors for not availing of ANC since 24.1 per cent of the women cited money being the reason for that. Distance to health facility (16.7%), family members did not allow (6.7 %), no time to go (9.7 %) were also other reasons cited for not using ANC.

In case of institutional delivery, 34.3 per cent reported that it was not necessary, 23.4 per cent stated that they did not have time, 23.4 per cent reasoned cost as a burden for not seeking institutional delivery. Other reasons are not customary (7.5%) followed by distance (11.7%), poor quality of service (4.5%), family did not allow (6.7%), lack of knowledge (6.8%), and others (2.7%).

TABLE 2
REASONS FOR NOT SEEKING ANC AND INSTITUTIONAL DELIVERY

Reasons	ANC (%)	Institutional Delivery (%)
Not necessary	53.4	34.3
Not customary	11.3	7.5
Cost too much	24.1	23.4
Distance is too much	16.7	11.7
Poor quality service	3.0	4.5
Family did not allow	6.7	6.7
Lack of knowledge	20.4	6.8
No time to go	9.7	23.7

Reasons	ANC (%)	Institutional Delivery (%)
Others	2.7	2.7

Data in Table-3 shows that proximity to health facility centre enhances maternal health care utilization by the users. The impact is found to be more prominent for institutional delivery, while the percentage of institutional delivery is 51.3 if any health centre is available at the place of residence; it was only 35.2 per cent where the health centre was located beyond 31 km of distance. For other two indicators, any ANC and full ANC, a decreasing trend has been seen with the increase in distance to any health care centre but the extent remained lower as compared to institutional delivery. 77.8 per cent of the pregnant women used any kind of ANC if health facility was at the village against 68.0 per cent for a distance of 31+ km. In case of full ANC, while it was 20.1 per cent if health facility was at the village, it was 14.3 per cent for the highest distance (31+ km).

TABLE 3
UTILIZATION OF MATERNAL HEALTH CARE IN RURAL INDIA BY DISTANCE TO HEALTH CENTRE

Distance to Health Facility from the Village	Any ANC (%)	Full ANC (%)	Institutional Delivery (%)
Within a village	77.8	20.1	51.3
Up to 5 km	76.2	16.3	48.0
5-15 km	74.9	15.8	43.3
16-30 km	72.1	14.1	39.0
31+ km	68.0	14.3	35.2

Interrelation between Socio-economic Status and Distance to Health Centre with Maternal Health Care Utilization

Data in Table-4 reflect maternal health care utilization by wealth quintiles and distance to any health facility centre from the place of residence. The findings confirm that both place of residence and health care infrastructure at the health facilities are important for the utilization of maternal health care services. It is found that an increase in distance from the place of residence to the health facility centre has an adverse impact on utilization of health facilities. Similarly, an increase in household income proportionately increases the utilization of health care facilities. The inter-relation between household wealth and distance to the health centre is also evident for all the three types of indicators of maternal health care. The percentage of women used any ANC belonging to first and 5th

quintile exposing health facility centre within the same village of residence were 72.6 per cent and 93 per cent respectively; the same having exposure to health facilities within 31+ km were 55.7 and 92.4 per cent respectively. A similar kind of inter-relation between household wealth and distance to health facility centre has also been observed for full ANC and institutional delivery. For example, 21.7 per cent of women belonging to the first wealth quintiles and accessing health facility within the same village of residence had institutional delivery against 87.7 per cent for 5th quintiles. Similarly, 17.6 per cent of the women belonging to first wealth quintiles with access to health facility within 31+ km from the village of residence had institutional delivery against 72.9 per cent for the women in the 5th quintiles.

TABLE 4
MATERNAL HEALTH CARE UTILIZATION BY WEALTH QUINTILES AND DISTANCE TO HEALTH CENTRE

Any Health Facility	Any ANC					Full ANC					Institutional Delivery				
	Wealth Quintiles					Wealth Quintiles					Wealth Quintiles				
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th
Within a village	72.6	79.1	81.7	92.4	93.0	14.1	21.4	25.7	32.3	41.9	21.7	39.2	52.1	67.6	87.7
Up to 5 km	62.3	65.8	76.4	86.0	94.7	6.5	8.6	15.1	20.9	35.8	25.7	36.4	46.2	61.8	75.9
5-15 km	58.9	65.9	76.4	84.8	93.6	5.3	7.9	15.4	22.2	33.1	20.6	29.0	43.2	56.5	76.8
16-30 km	55.7	63.9	74.2	84.7	92.4	5.0	7.7	13.9	22.2	30.7	17.6	27.6	40.0	54.2	72.9
31+ km	52.3	62.4	73.2	82.8	91.1	5.8	9.4	16.3	23.4	33.4	17.8	26.9	38.7	53.3	70.6

A symbiotic relationship has also been seen between education, distance to the health facility centre from the residence; and maternal health care utilization. Education-level of the service-users seems to be more important than the distance from the place of residence to the health facility centre as far as utilization of maternal health care is concerned (Table 5). While utilization of maternal health care services vary marginally with the increase in distance from the place of residence to the health facility centre. But utilization of maternal health care services increases sharply with an increase in education-level irrespective of the distance from the user's home to the health centre. While 85.7 per cent of the illiterates utilised any ANC in spite of having the health facility centre in the same village, 92.7 per cent of the higher-secondary educated users availed any ANC although the facilities were beyond a distance of 31+km. In the case of utilising any institution for delivery; 35.7 per cent of the illiterate women, 37.6 per cent of

below-primary educated women and 50.2 per cent of the women with education up to primary level utilised this service in their own villages but 72.9 per cent of the higher-secondary educated women travelled beyond 31+ km to have institutional delivery (Table 5).

TABLE 5
MATERNAL HEALTH CARE UTILIZATION BY USER'S EDUCATION-LEVEL AND DISTANCE TO HEALTH CENTRE

Any Health Facility	Any ANC					Full ANC					Institutional Delivery				
	Education					Education					Education				
	IL	BP	PR	SE	HS	IL	BP	PR	SE	HS	IL	BP	PR	SE	HS
Within a village	85.7	77.7	85.7	89.6	94.4	35.7	19.1	25.4	35.8	50.4	35.7	37.6	50.2	70.5	85.2
Up to 5 km	65.2	73.9	83.8	92.1	95.3	13.0	18.1	19.2	29.1	41.3	39.1	39.6	55.0	73.4	81.7
5-15 km	71.1	73.9	83.5	91.7	95.6	3.9	12.9	19.2	31.6	38.8	27.6	35.9	50.9	71.1	81.5
16-30 km	70.9	72.7	81.4	91.0	95.7	4.4	11.0	17.5	31.1	37.1	22.5	32.8	47.6	66.2	78.1
31+ km	70.0	67.5	79.7	89.1	92.7	6.5	11.9	19.3	31.4	38.8	22.0	27.6	45.2	63.1	72.9

IL= Illiterate, BP= Below Primary, PR= Primary, SE=Secondary, HS= Higher Secondary

Motivational Factors behind Utilizing Maternal Health Care Services

It is well known that self-awareness is most important for utilisation of health care services and that can also be enhanced through motivation from external sources like health professionals, relatives, friends, campaigns, etc. It is seen that there are various sources of motivation that a woman receive for utilizing maternal health care services apart from her self-awareness. Findings in Table 6 show motivation from husband is found to be the most important source for seeking both ANC and institutional delivery. 30 and 22.3 per cent of the women reported that they were motivated by their husband for adopting ANC and institutional delivery respectively. It has been seen that the Anganwari worker has more influence for motivation than the ASHA as the earlier one motivated 13.4 per cent of women for ANC and 6.8 per cent for institutional delivery while the figures stand at 3.6 and 3.0 per cent respectively for the later. Relatives also motivated to a great extent; 23 per cent of the women stated that they were motivated for ANC and 16.4 per cent of the women were motivated for institutional delivery. Other sources of motivation like mother, mother in-law, and relatives, health professionals' roles were also found to be very significant as far as adopting maternal health care services are concerned.

TABLE 6
PERCENTAGE DISTRIBUTION OF WOMEN BY SOURCES OF MOTIVATION
RECEIVED FOR UTILISING ANC AND INSTITUTIONAL DELIVERY

Sources of Motivation	ANC	Institutional Delivery
Doctor	11.5	09.2
ANM	23.1	13.1
Health care professional	03.0	02.2
Anganwari worker	13.4	06.8
ASHA	03.6	03.0
NGO	01.3	01.3
Husband	30.0	22.3
Mother	15.8	10.1
Mother in-law	10.8	08.8
Relative	23.0	16.4
Self	27.4	12.6
Others	0.90	0.60

Multivariate Analysis

Logistic regression model has been used considering the binary nature of dependent variables such as seeking any ANC, full ANC, and institutional delivery. This analysis has been carried out for understanding the determinants of using any ANC, full ANC, and institutional delivery. The results show that age, religion, education, household economic status and distance to any health facility centre from the residential village are important factors as far as using maternal health care services. It has been observed that utilization of maternal health care services decreases with the increase in age. For example, using any ANC is less by 12 per cent for the age group of 20-29 years, 34 per cent for the age group of 30-39 years, and 41 per cent for the age group of 40-49 years as compared to the age group of 15-19 years. Education is found to be positively associated with the increased use of maternal health care services. Utilization of any ANC to full ANC and institutional delivery increases with the increase of women's education. Husband's education, however, shows weak influential power to increased maternal health care utilization. Though women use greater maternal health care services if their husbands are literate as compared to illiterate husbands, sharp increase has not been observed with the increase of husband's educational level. Household economic status represented by household's wealth index is found to be very important for utilisation of maternal health care services. In the current study, it was found that utilization of maternal health care services

increased with the increase of household wealth; women belonging to the richest quintile (any ANC 4.43 times more, full ANC 2.58 times more, and institutional delivery 4.62 times more in comparison to the poorest quintile). As expected, distance to the health facility is found to be another important influential factor for utilising maternal health care services. Utilization has been seen high for women who had accessibility to the health facility within the residential village as compared to women those accessed from a distant place, and utilization is found to be decreasing marginally with the increase in distance to the health facility centre. Another important finding observed through the multivariate analysis is the significant association between sources of motivation and continuation of maternal health care use. It is observed that women are more likely to receive full ANC and resort to institutional delivery if they receive motivation from their husband. Hence, male involvement in the women's reproductive health care is found to be an important component towards enhancing utilization of maternal health care. Even the analysis shows that husband's motivation works much better than self-motivation or other relatives' as far as using full ANC and institutional delivery is concerned.

DISCUSSION AND CONCLUSION

Findings of this study reiterate the fact that the utilization of maternal health care in India, particularly in rural India, is low. Recent data (DLHS-3) show that India needs to go a long way to reach at the ambitious target of using full ANC and institutional delivery that has been set in the millennium development goals. The main problem lies in the dropout rate with regard to the utilisation of maternal health care services, starting from ANC to institutional delivery. While using any ANC remained fairly at the satisfactory level (around 70 %), the coverage of full utilization of ANC and institutional delivery remained at very low levels.

TABLE 7
RESULTS OF LOGISTIC REGRESSION ANALYSIS

Characteristics	Any ANC	Full ANC	Institutional Delivery
	Rural	Rural	Rural
Age (Ref. 15-19)			
20-29	0.82a	1.16a	0.73a
30-39	0.61a	1.06a	0.63a
40-49	0.45a	1.04	0.55a
Religion (Ref. Hindu)			
Muslim	1.15a	1.23a	0.86a

Characteristics	Any ANC	Full ANC	Institutional Delivery
	Rural	Rural	Rural
Christen	0.79a	1.09b	0.76a
Others	0.81a	0.66a	1.06b
Women's Education (Ref. Illiterate)			
Below Primary	0.91	1.54a	1.29b
Primary	1.31b	1.99a	1.90a
Secondary	2.16a	3.12a	2.91a
Higher Secondary & above	3.24a	3.96a	4.20a
Husband's Education (Ref. Illiterate)			
Below Primary	1.04	1.77b	1.58b
Primary	1.04	1.68	1.62b
Secondary	0.92	1.55	1.58b
Higher Secondary & above	1.00	1.36	1.53b
Household Wealth Quintiles (Ref. Poorest)			
Second	1.28a	1.24a	1.39a
Middle	1.82a	1.68a	1.95a
Fourth	2.81a	2.09a	2.85a
Richest	4.53a	2.58a	4.62a
Sources of motivation for ANC (Ref. Health workers)			
Relatives		1.01	1.31a
Self		0.96	1.02
Husband	1.77a	1.77a	1.88a
Others	1.00	1.00	1.23a
Distance to Health Facility (Ref. within village)			
Within the village			
Up to 5km	0.67a	0.60a	0.83a
5-15 km	0.66a	0.60a	0.75a
16-30 km	0.59a	0.56a	0.64a
31+ km	0.53a	0.56a	0.61a
Constant	3.99a	0.05a	0.26a

N=643944

Note: 'a' denotes $p < 0.01$; 'b' denotes $p < 0.05$

Expectedly, socio-economic status of a women and accessibility to health facilities are found to be important as far as utilization of maternal health care is concerned. Gradients in the utilization are found to be very distinct for both socio-economic status and distance to health facility centre. Among many other influencing factors; education, particularly, women's education, household economic standard and accessibility to health facility are found to be very effective in influencing utilization. Utilization of maternal health care increases substantially with the increase of all these factors. However, when relative comparison comes, household wealth is found to be relatively more effective than the proximity to health centre for enhancing utilization of maternal health care services. The evidence stands more firm when other confounding factors to maternal health care utilization are taken into account. A significant difference has been observed in the utilization of health care services between the people with access to health centres in their own village and people with access to the health facility located outside the residential village. But that difference does not increase significantly as the distance to the health centre increases. On the other side, education and household wealth are found to be relatively more effective in enhancing maternal health care; with the increase of both the factors, a sharp increase in utilisation of maternal health services has been observed. This finding perhaps strengthens the existing findings that 'socio-economic status of an individual is relatively more important than the proximity to health centre for using maternal health care' as observed by some others²⁹.

Cost for health care has been another important barrier to access maternal health care services. About 23 per cent of the women reasoned high cost for not using ANC and institutional delivery. This picture is quite natural considering the very high delivery cost required to access maternal health care services, particularly for institutional delivery^{29,30}. It was found, based on one study in Maharashtra, that average cost per delivery was rupees 1,039 if delivery was institutional as compared to rupees 160 if it was a home delivery amongst the people belonging to the lowest socio-economic group^{30,31}.

As we know, self motivation and knowledge about health care services lead to increased health care utilization; this study reiterates the fact once again. However, an interesting observation is that only self-motivation may not be enough for women for utilising health care services. External motivations like motivation from husband, relatives or health professionals are also stimulants for pregnant women leading to increased use of maternal health care. Amongst these motivational sources, husband and relatives, particularly mother in-law are in the fore front. In the analysis, it has been seen that motivation received from husband, health professional and relatives (mainly mother in-law) has a stronger impact in utilising ANC and institutional delivery than their self-motivation. This observation simply implies that until now, rural Indian women's decision to utilise health care does

not lie in their own hand; they need to depend on the permission from either husband or mother-in-law. Considering the women's less autonomy in terms of going out of their homes and decision-making power, it is quite usual that self-awareness or health professionals' advice for seeking maternal health care will not be materialized unless husband or mother in-law act as motivators and allowing women-folk to seek maternal health care. Importance of husband's involvement for enhancing maternal health care services is not a new phenomenon as ample numbers of studies have proved that husband's participation and motivation enhances women's maternal health care utilization. International studies from various regions have shown that reproductive health programmes are likely to be more effective for women when men are involved in some way³². A study conducted in Bombay found that women made a greater number of antenatal maternal health clinic visits when their husbands had attended an informational session at the clinic, compared with those whose husbands did not attend³³.

In conclusion, it can be noted that strengthening health care infrastructure from the supply side is essential for enhancing the health care utilization. But increase in supply does not mean only provision of health infrastructure; it must ensure quality health care services reach the people. Parallel efforts for strengthening health care infrastructure and maintaining an affordable cost must be placed for ensuring universal maternal health care utilization. The main priority must be given to increase the demand for health care by providing women higher education and improving their economic status rather than only setting up health centres since enhanced demand is found to be more effective than the enhanced supply as far as utilisation of maternal health care services is concerned.

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