

## **CHAPTER 2**

### **Review of Literature**

To provide a comprehensive idea of the concept of immunization and the factors that affect the coverage of child vaccinations, it is important that to examine the studies that have already been carried out. Though the present attempt is not an exhaustive description of all available works on child immunization, it is an attempt to review the recent relevant research findings, which have a bearing on the proposed analysis.

The main aim of this chapter is to review earlier studies that focused on various dimensions of coverage of vaccinations and factors influencing it among children around the world and in India, so as to identify the research gaps in this field. The reviews are set first at the international level, then national level and last state level. Further, they are presented in the headings of household, individual, child level characteristics and Programmatic factors. The main focus of the study is to throw light on relations between socio-cultural, economic, demographic and program related variables and child immunization behaviour. Based on the review of literature, we have developed a theoretical framework for the study.

#### **Impact of household level factors on child immunization**

Empirical studies of preventive services have found that use of health services is more strongly correlated with demographic and socio-economic factors than with health beliefs (Despande 2001; Borooah, 2004; Yadav *et al.*, 2003; Manjunath and Pareek 2003; Mohan 2005; Parashar, 2005; Desai and Kulkarni, 2008). At household level, the socio-economic factors which have an impact on the childhood vaccination are social group affiliation (caste/tribe), type of family, standard of living of the household or wealth status of the household.

#### **Caste/tribe or social group affiliation**

Caste/tribe or social group affiliation is an interesting characteristic of the household and principle social determinant of child immunization for this study. Almost all the extensive surveys around the world show the differentiation of child immunization between tribal and non-tribal population. Possibly because they live in small hamlets, far from main inhabiting area, much more difficult place to cover by outreach services than the general

rural population and may be cultural beliefs of the STs offer resistance to the concept of immunization (Tandon *et al.*, 1992; Mishra and Dash, 2006). On the other hand, they have their own practices for different types of diagnoses and treatments during the illness of person. Even other social groups across the societies have their own belief system. Therefore in some communities, religious and traditional beliefs prevent going in far available immunization services. Therefore, household characteristics are important predictors in this regard.

In the Indian context, caste or social group affiliation can be considered as a proxy for socio-economic status and poverty. In the identification of the poor, SC, ST and OBCs are considered as socially disadvantaged groups which have a higher probability of living under adverse conditions and poverty (Nayar, 2007). Perhaps the social group affiliation is also associated with social identity, attitudes and health-seeking behaviour. Therefore, these inter-caste relationships sometimes act as a barrier to immunization when providers and clients of health services from different caste cannot relate with one another (Streefland, 1999). Consequently, a mother from SC or ST household becomes less likely to vaccinate her child as compared with the other socially forward groups (De and Bhattacharya, 2002; Parashar, 2005; Nayar, 2007; Sharma, 2007; Nath *et al.*, 2007; Godi and Kusuma, 2008; Yadav and Guruswamy, 2010; Singh, 2010). So, the social group affiliation is correlated with the cost of access to general health facilities (Choi and Lee, 2006).

#### *Theoretical perspectives on social group affiliation and child immunization*

Several possible explanations for social group affiliation differences in child immunization have been put forward, among which are that:

- Social group affiliation increase variation in child immunization which is reflection of differences in socio-economic and demographic characteristics. This implies that social group affiliation is confounded by socio-economic position.
- The relative effects of cultural and traditional factors associated with social group affiliation *per se* are independent of socio-economic and demographic factors. This ascribes importance to norms, beliefs and ideals as key to understand variations in child health outcomes regardless of socio-economic status.

- Adherence to and the performance of cultural-specific practices and beliefs may enhance or hinder child survival. They include perceptions of disease aetiology, treatment pattern and child care practices.
- There is an association between social group (caste/tribe) dominance in national political economy and child immunization levels that occur through the preferential challenging of economic benefits at the household and community levels. This political dominance enables certain social groups to secure and maintain greater political power and advantage over other social groups.

### **Household structure**

A household is usually the fundamental social unit in which men, women and children live. It is also the basic unit of production and consumption. Hence, household structure is frequently identified as a prime determinant of children's economic and social well-being. The measure of child immunization against several childhood diseases provides an opportunity to directly measure how household resources are used for children's health and is a useful indicator of intra-household resource allocation (Gage *et al.*, 1997). The positive association between household structure and socio-economic status is confirmed by researches (Dasgupta, Weatherbie and Mukhopadhyay, 1993) found that in West Bengal the proportion of households that are nuclear increases as one moves from high to low caste. In rural Andhra Pradesh, a higher proportion of nuclear families compared with joint families were observed to belong to the lower per capita income group (Murthy *et al.*, 1985). Therefore, economic status compared with household structure is more strongly related to immunization.

#### *Theoretical perspectives of household structure and child immunization*

- Household provides two key resources to a child, viz., money and time. It acts as a context for the child as well as a mediator that provides the support associated with positive child wellbeing outcomes (Thomson *et al.*, 1994). However, households are not homogenous in terms of their discharge of duties and there are significant variations between households, with in households as well as between different settings with respect to how households use time and resources for children's wellbeing.

- Among the extended family households, there is a belief that kins residing together in very close proximity to one on other have the ability to meet many of the social and economic needs of family members, including child care. In modified extended family where other family members reside, there may be the older women to provide housekeeping and child-care services. This is because co-residence implies an exchange between family members with respect to production, consumption and child-rearing functions. Children in extended families are, therefore, not worse off than those in nuclear families in terms of full immunization.
- The prenatal attitudes are more dominant in joint and extended families than in nuclear ones because in such families children are considered as an asset in terms of family labour (Davis, 1956). In India, most of the tribal communities, specially the agrarian, predominantly have joint families. There are many tribes in different parts of the country which also maintain nuclear families (Gurumurthy, 1990).

### **Place of residence**

India is characterised largely by rural, hard-to-reach communities, with extensive poverty as well as poor healthcare and social infrastructure. This situation leads to lack of information of the importance of childhood immunisation and other important health-promoting programmes. Therefore, rural areas are often deficient in healthcare facilities and skilled healthcare workers help to explain the resulting rural-urban inequity in childhood immunization. These differences between the urban poor and non-poor existed for infants who did not receive the first dose of DPT (taken to represent children left out of the immunization programme), as well as those who did not receive the third dose of DPT (representing children who dropped out from the immunization programme). The ICMR (1999) reported a rural-urban imbalance in complete vaccination as well as no vaccination across India.

Nair and Varughese (1994) observed that the percentage of partially immunized children was lower in the urban area when compared with semi-urban and rural areas. This indicates that those children who received immunization in urban area were more regular in completing the doses than the children in semi-urban and rural areas. Podder (1988) in a comparative study on the immunization status of children in rural and urban

areas reported that the mother's knowledge as well as their children's full immunization coverage with individual vaccines was more in the semi-urban and rural areas than in the urban areas. Inequality is also present within urban regions of India. Re-analysis of the NFHS-3 data reported that full immunization among infants of urban poor (viz., lowest wealth index quartile) was significantly low as compared with non-poor (upper three wealth index quartiles) children (Mukherjee, 2007).

#### *Theoretical perspectives of place of residence and child immunization*

- Immunization coverage implies an increase in average immunization which may not essentially assure universal and equitable coverage of immunization services, especially to the poor or underserved groups (Wagstaff, 2002).
- Irrespective of the world regions, the urban advantage in the utilization of health care services over rural areas has been repeatedly emphasised (Kumar, Singh and Rai, 2012; Firestone *et al.*, 2011).
- The urban infrastructure has often been attributed to the improved modern health care system (Fay, Leipziger, Wodon and Yepes, 2005). In addition, there are many advantages for urban women including higher level of knowledge, access to services and health promotion programmes that use urban-focused mass media (Fotso, 2007).
- In contrast, the utilization of health services in rural areas is limited by factors associated with availability, accessibility and quality of services as well as characteristics of the users and the communities in which the users live (Amin, Shah and Becker, 2010). Specifically, geographical access has a greater impact on the utilization of health care services, particularly in rural areas with limited service provision of health care services (Ronsmans and Graham, 2006).

#### **Household standard of living**

Several research studies argue that child immunization is positively related with household standard of living (Mosley *et al.*, 1984; Som, Pal and Bharati, 2010). The direct relationship between the economic status of families and vaccination coverage can be observed from coverage evaluation survey (2010), which reports complete vaccination rate among families with and without BPL (below poverty line) cards.

It is also observed that although wealth-based inequalities decreased in urban areas, they did not change significantly in rural areas. This suggests that less wealthy people in villages had lower vaccination rates. In rural areas, although vaccination coverage increased, much of this occurred in wealthier segments of the population. The reanalysed NFHS-3 data and calculated an adjusted score against the backdrop of average health status of the population and wealth strata (Arokiasamy and Pradhan, 2011). They showed that poor child health is mostly found in poor households while the highest impact of increasing average immunization coverage rates occurred in wealthier households. The southern states are generally at the top end of the immunization rankings. The traditionally poor performing states such as Rajasthan, Uttar Pradesh, Bihar, Odisha, Chhattisgarh and Madhya Pradesh showed a mixed pattern.

Family income and willingness to pay are also frequently reported by studies as factors influencing children's vaccination. (Arokiasami, 2004; Borooah *et al.*, 2007; De and Bhattachary, 2002; Unisa and Rashmi, 2006).

*Theoretical perspectives of household standard of living (Index) and child immunization*

- Vaccination can be done within or outside village. If immunization is not performed in the villages, then children can be taken to the nearest facility. But low family income and agricultural occupation may deter them from covering long distances.
- Wealth played a particularly important role in the vaccination status of children whose mothers were less empowered.
- Economic condition of a household is one of the significant predictors of infectious childhood diseases that may occur early.
- Income and wealth are important because the service fee may impose a heavy burden on low-income families while high-income families could easily afford to pay it.
- The services of traditional healer at home or private dispensaries charged either in cash or in kind as per their will, which creates economic burden on household.
- The utilization of health care services is observed also more among the cluster those people who had adopted permanent agriculture than those of foragers.

## **Impact of individual level factors on child immunization**

### **Educational level of mother and father**

For the care of infants an almost exclusive domain of women in most societies, policy makers and researchers unanimously support maternal education as an appropriate tool for improving the overall health and survival of their infants as well as influencing the timing and shape of demographic processes (World Bank, 1993). There are many studies to show that in many societies, better educated mothers more commonly use maternal and child health services than less educated mothers (Tekee and Shorter, 1984; Caldwell *et al.*, 1983; Howlader and Bhuiyan, 1999). It improves the knowledge about basic preventive measures carried out by health workers and others and so utilization of modern preventive services (Streatfield *et al.*, 1990; De and Bhattacharya, 2002; Kiros and White, 2004).

There is a significant relationship between education and acceptance of complete immunization (De and Bhattacharya, 2002) so children of uneducated mothers have the lowest vaccination coverage level (Caldwell, Reddy and Caldwell, 1983). Higher immunization levels for the children of educated mothers may reduce the likelihood of diseases such as measles, thereby reducing the mortality rate for children of both educated and uneducated mothers in a community owing to "spill over" effects.

On the other hand, it is certain that an educated woman can achieve higher status within her family and also in the neighbourhood. As they are better able to break away from tradition to utilize modern means of safeguarding their own health and of their children (Caldwell and Caldwell, 1990; Cleland, 1990). They are also better able to make independent decisions regarding their own and their children's health which leads to greater utilization of modern health facilities (Caldwell, 1990; De and Bhattacharya, 2002). Educated women also utilize available resources in the community for their advantages (Barrera, 1990; Goodburn, *et al.*, 1990; Godi and Kusuma, 2008).

By keeping the mother's education as a constant at primary level when the father's educational level increased from illiterate to literate and above, some positive impact on immunization is observed. Thus, an educated father, although perhaps not directly responsible for childcare, may initiate changes in his family's traditional beliefs

and practices. This is reflected in the greater impact of both paternal and especially maternal education on the utilization of health care services such as child immunization. Education affects and also increases people's perceptions of health needs, their knowledge of health services and their capacity to acquire them. Education benefits both women's and children's health through its impact on child-rearing behaviour (De and Bhattacharya, 2002; Davis-Kean, 2005; Jejeebhoy, 1993; Singh, 2010).

Indeed, educating the parents (both mothers and fathers) about immunisation appears to increase the immunisation coverage among the children of both illiterate and literate parents (Gedlu and Tesemma, 1997; Dhadwal *et al.*, 1997; Brugha *et al.*, 1996; Rahman, Islam and Mahalanabis, 1995; Odiit and Amuge, 2003). Education factor goes beyond the simple value of the parent's own education and its effect must be found at the community level (Parashar, 2005; Kravdal, 2004). Kravdal (2004) identifies a "community education effect" while Parashar (2005) states that a child's immunization status is "affected by more than his or her mother's education; it is also influenced by the larger context created and sustained by other women's education". In Nair's study (2007) shows that in Kerala female literacy rates are high and people are more aware of their health needs, generally demanding more of these services. For Kravdal, raising community-level education also implies raising men's education. De and Bhattacharya (2004) concurs that increased father's educational level would have positive impact on children's immunization.

#### *Theoretical perspectives of mother's educational level and child immunization*

- A woman's education raises her skill overall self-confidence, exposure to information, and allows her to interactive with and feel control over modern health care institutions, utilization of preventive and curative health services like anti-natal care, post-natal care and care of the baby, understanding about personal hygiene, better nutrition, etc. (Caldwell *et al.*, 1979; Cleland, 1990) which affects the level of understanding or ability to not only attending the clinics but also follow the instructions given by health care provider and realize when a child should be taken to hospital (Meegama 1980). For example, Streatfield, Singarimbun and Diamond (1990) documented that female education enhances child survival because of greater knowledge of the protective function of the major childhood immunizations.



- Education is likely to impart greater responsiveness to better ideas and services, greater identification with the outside world, and more social confidence in handling health personnel. In addition, education may enhance the ability and willingness to travel outside the home, community in search of health services.
- Education brings a change in the traditional values and norms which has an influence on child health.

### **Working status of mother**

In the developing world women's incomes are particularly important because they are more likely than men to direct their earnings toward meeting children's needs (Bennett, 1988; Senauer, 1990). Maternal employment clearly increases cash availability and expenditure on children's needs. On the other hand, it also shifts power within the household, enhancing gender equality and improving outcomes for women and girls. Working mothers, particularly those working in the informal sector, resume their duties soon after childbirth owing to a lack of social security. As a result they spend less time in child care and feeding. Therefore, it is important to think over the matter as a point of social security (Ghosh, 2005).

However, studies show that in India maternal work status does not have significant effect on the chances of a child being immunized (Sivakami, 1997). In rural areas it is especially difficult to assess the exact effect of the mother's occupation on child health care, which may vary widely according to the socio-economic set-up. In northern India women, as a result of their illiteracy, their low economic status and longer working hours spent in the field, did not have adequate time to give proper attention to their children's health care (De and Bhattacharya, 2002). It is also argued that parents with a service sector occupation are more aware of the benefits of immunization for their children because it links with greater awareness of immunization in the case of Rajasthan (De and Bhattacharya, 2002). At the same time, women's work is also correlated with a greater neglect of children. Pande (2005) finds the increased immunization when women are either not working or engage in household work.

On the other hand, when the father is absent at household and mother needs to care for both household income and child, children are often poorer regarding their health

(Louat *et al.*, 1993). When mother is the only earner of the household and spends longer hours on both income- generating activities and domestic duties, it adversely affects child's wellbeing (Amato, 1987; McLanahan and Sandefur, 1994). Sempebwa (1988) observed that children whose mothers were working away from home for more than six hours a day were less likely to be taken for immunization and medical treatment.

#### *Theoretical perspectives of mother's working status and child immunization*

- The economic factor is the most dominant motivational force which leads a couple to decide in favour of child immunization.
- Care giving capacity of working mothers is less because being at home means wage loss which creates lot of burden in household. But the time women spend in the labour force sometimes has undesirable consequences for general child care. Therefore, the variation in outcomes is commonly explained in terms of the degree of compatibility between work and child care, and the quality of substitutes for maternal.
- The effects of women's work varied significantly by occupation, with mothers working in the professional, services and manufacturing sectors taking longer to complete the immunization schedule than mothers working at home.

### **Impact of demographic factors on child immunization**

#### **Mother's age at birth of index child**

The variable is important to include in the study because children born young age are more likely to belong to a low socio-economic environment and it is well known that the age at marriage and child bearing in India is low for women belonging to socially backward community. Therefore, they will be less able to take care of their child because they themselves are psychologically immature (ELO, 1992). On the other hand, because the availability of modern health services that have increased in recent years; they will be utilized more by younger than older women when they begin childbearing. It is quite possible that such experience has an effect on behaviour. For instance, older women might be less comfortable with modern medicine and more reluctant to take advantage of the available services than young women, which may indirectly mean the decision in favour of the vaccination of the child. At the same time, it needs to be remembered that in

India mobility and empowerment of women are low. For a young mother physical access to and the availability of many health care services (especially in rural areas) are serious problems. For example, long distances from the PHC to home, paucity of transport to the health centre, attitude and availability of health personnel, etc., are important issues, which have some definite impact on the child immunization of young mothers (De and Bhattacharya, 2002).

#### *Theoretical perspectives of mother's age at birth and child immunization*

- Young mothers in India have lesser mobility within or outside village. If the health facility is far from home, the likelihood of child to be vaccinated becomes less.
- Usually young mothers are less educated and so their bargaining power is also less, which may indirectly have a negative impact on immunization.
- On the other hand, young mothers are more exposed to different forms of media. Therefore the knowledge among them will also be more than older mothers. If immunization services are available and accessible then the coverage of child immunization may increase of their children.

#### **Birth order**

The number of siblings is also an important factor which may affect the chances of a child's access to health facilities (Knodel and Wongsith, 1991; Muhuri and Preston, 1991; Jejeebhoy, 1993; Bhat, 2002). The evidence of parents preferring one child over the other when it comes to sharing resources is not hard to find (Miller, 1981; Bairagi, 1986; Basu, 1989; Das Gupta, 1987; Griffiths *et al.*, 2002; Pande, 2003; Mishra *et al.*, 2004; Borooah, 2004; Oster, 2006). Once the exogenous circumstances are identified, then the inequality of opportunity in access to basic services can be measured (Singh, 2011). The reason may be higher order children are born into families that already had a number of young children who compete for resources and parental care (Pandey, Choe, and Luther, 1998). Children born later are found to be more likely to take all the vaccines. The reason might be that such children are more favoured in this context. Beyond a certain birth order, children of high birth orders are advantaged in terms of accessing health care, which suggests a non-linear relationship between birth order and wellbeing (Tinkew and Dejong, 2005). A study by Streefland *et al.*, (1999) based on vaccination patterns in

Bangladesh, Ethiopia, India, Malawi, the Netherlands and the Philippines found that parents' acceptance of vaccination may change "between one child and the next, in the course of one child's vaccination career, or in the case of a specific vaccination". Pande (2003) observes patterns of selective neglect in immunization across siblings in India based on birth order. Parents are more likely to immunize (wanted) first male and female children, and tend to neglect (unwanted) higher birth order females. In addition, the detrimental impact of high birth orders on immunization affects more severely girls than boys (Arokiasami and Pradhan, 2011; Mishra *et al.*, 2004).

#### *Theoretical perspectives of birth order and child immunization*

- The time allocation theory of Becker (1965) suggested that a mother's demand for immunization is likely to be correlated with heterogeneity in the other inherent qualities of children born within a family.
- Although this is potentially an important issue, little evidence exists with regard to how health inputs are allocated across family members as a function of their endowments.
- Child immunization among higher order is less favourable for girls than boys.

#### **Sex of the child**

The role of gender and sex discrimination in immunization coverage has been a subject of much debate in recent years with terminology often used interchangeably. Gender is another factor which influences the chances of a child to access basic health facilities. There is ample evidence of female children being neglected by their families in comparison to the male children when it comes to provide basic facilities which includes child immunization (Basu, 1989; Borooah, 2004; Das Gupta, 1987; Griffiths *et al.*, 2002; Kishor, 1993; Mishra *et al.*, 2004; Pande, 2005). For example, researches have attributed sex differentials in the use of preventive or curative health services as one factor that accounts for a part of the female mortality in Asia (Chen, Huq and D'Souza, 1981). A study in Bangladesh shows that the sex of the child was one of the important determinants of childhood immunization during the period 1993-94. The Norwegian Refugee Council/Global IDP Project (2003) reported that female children in Nepal face reduced opportunities and discrimination at all levels (Norwegian Refugee Council/Global IDP

Project 2003) including medical care (Bhandari *et al.*, 2007). The Asian Development Bank (2002) noted the gender-based exclusion with discrimination against women affecting their survival, health and educational opportunities, ownership of assets and mobility. Using DHS data from developing countries, Hill and Upchurch (1995) reported a gender gap in child immunization and its significant effect on mortality favouring boys. In rural India, the desire for having a boy is stronger which lead to gender discrimination in getting immunization (Mosley and Becker 1991; Mosley and Chen 1984). Studies in North and South India found that boys much more likely to take the health facility when they are sick in comparison with girls (Caldwell *et al.*, 1982; Das Gupta, 1987; Caldwell and Caldwell, 1990; Ganatra and Hirve, 1994; Kishor, 1995; Govindaswamy and Ramesh, 1996).

Arokiasami and Pradhan (2011) observed that in India female children born to illiterate women in northern and north-central regions are significantly less likely to receive DPT vaccination. Borooah (2004) suggests that if mothers' education favours a fuller immunization of children, it does not affect the boy preference pattern that prevails in immunization practices: "maternal literacy, by raising the likelihood of being fully immunized by the same amount for boys as for girls, did nothing to erode the five point immunization gap between boys and girls.

Sang-Hyop Lee (2004) suggested that a mother's demand for immunization is likely to be correlated with birth outcome. In this context, a child's sex plays a role in India where son preference is common. A child's sex is usually not known until the time of delivery. Then the gender outcome is revealed leading to different treatment of sons and daughters. Surprisingly, tribals in India show a more balanced view concerning the preference of sex of the child. But even with a strong son preference, women are more likely to immunize girls if it does not take too much effort, time or cost (Choi and Lee, 2006).

It is argued that issues revolving around the size of a family, sex composition of the family, number of children, birth order and siblingship reveal complex combinations leading to variations in children immunization. For example, Pande's (2005) analysis of the overall costs of immunization reveals how they affect the girl child more severely than the boy child. Choi and Lee (2006) state that during underlining the interplay

between urban and rural divide and differentials in sex preference for children, that “prenatal care does not increase the access to immunization for girls in rural area”.

#### *Theoretical perspectives of gender of child and child immunization*

- Traditionally boys deemed the continuation of family lines and the source of old-age support for the parents. Therefore, the desire for having a boy is strong especially in rural areas which lead to gender discrimination in getting immunization (Mosley and Becker, 1991; Mosley and Chen, 1984).
- The sex of a child plays a role regarding child immunization in India because of son preference. The sex of a child is usually not known until the time of delivery. Since, mother’s demand for immunization is likely to be correlated with birth outcome. Therefore, different treatment is given to sons and daughters when the gender of the child is revealed.
- Tribals in India show a more balanced view concerning the sex of the child. Even with a strong son preference, tribal women are more likely to immunize girls if it does not take too much effort, time or cost

### **Impact of programme factors on child immunization**

#### **Mass media exposure**

In a society the innovative ideas of an individual or a group of individuals diffuse to other individuals because of social interaction through two important mechanisms, i.e., social learning and social influence. The former concerns individuals’ acquisition of information and knowledge from others through interpersonal communication and impersonal sources like mass media. It is evident that exposure to mass media greatly influences a day-to-day life of people (Kincaid, 2000). Similarly, mothers’ exposure to mass media increases knowledge about child immunization and becomes a strong motivating factor for it.

The second mechanism - social influence - refers to the ways some individuals exert influence over others’ decision-making. A study in Nepal shows that exposure to mass media had an indirect effect on interpersonal communication as well as positive change in attitudes and perceived social norms (Choi and Lee, 2006). An independent assessment by JHU and AC Nielsen ORG- Marg in 2004 demonstrated the effectiveness

of interpersonal communication in Uttar Pradesh in raising awareness, influencing family attitudes positively towards immunization and seeking out information related to Polio from friends and family members. Choi and Lee (2006) observed in their study that the exposure to media is significantly related to full immunization. A mother who watches television or listens to the radio at least once a week is more likely to have her child vaccinated.

#### *Theoretical perspectives of mass media exposure and child immunization*

- Mother's exposure to mass media has been found as a strong motivating factor for child immunization. The mother who is exposed to mass media is more likely to have access to information on immunization and other child health services.
- Media exposure positively correlates with economic status which influences utilization of health services and overall well-being.
- Even if mothers are not exposed to mass media then indirectly through inter-personal communication the message spreads within the community which brings a positive change in attitudes about child immunization.

#### **Place of delivery**

Universally, contextual or community-level characteristics are important predictors of full immunization uptake as evidenced by the findings that living in communities with a low proportion of mothers who have hospital delivery is associated with significantly lower likelihood of children receiving full immunization. Possible explanations for this finding may be the increased confidence in the value of child immunization and institutional delivery amongst mothers who attend prenatal care by doctor and amongst those who delivered in a hospital setting, which may be developed from counselling during prenatal care. Developing a familiarity with health care systems tends to increase the likelihood of subsequently utilizing health care services such as child immunization and institutional delivery amongst mothers (Antai, 2011). Many studies show that institutional delivery has a positive role in the coverage of child immunization (Choi and Lee, 2005; Lee and Mason, 2005; Munshi and Lee 2000; Sugathan, Mishra and Ratherford, 2001). On the other hand, being born at home was found to be a risk factor for incomplete or non-vaccination of a child.

Several authors stress the need for more health education (Odebiyi, 1982, Helman, 2004) and the main source of health education mentioned in the studies is the health personnel. During or after delivery health personnel are counselling about the importance of subsequent programmes, such as child immunization, and develop confidence in the value of these immunization programmes (Streatfield *et al.*, 1990; Bastien, 1995; Bisht, 2000; Topuzoglu, 2007). Consequently, the lack of information provided by the health personnel during vaccination is a major missed opportunity (Bastien 1995; Topuzoglu 2007), which sometimes reminds past colonial experience to communities (Bastien 1995).

#### *Theoretical perspectives of place of delivery and child immunization*

- Institutional delivery increases chances of a mother accesses subsequent health care service for her child such as immunization.
- Women may receive counselling about the importance of child immunization and develop confidence in the value of immunization.
- They may develop familiarity with health care systems, increasing the likelihood that they will later rely on these systems for the benefit of their children (Choi and Lee, 2006).
- Women's beliefs regarding the risk of effectiveness of health care affect the likelihood that they will have their children vaccinated (Strobino *et al.*, 1996).

#### **Accessibility**

Access to health care is the outcome of women's status in society, including the society's response to health needs of women. There are four broad areas: need, permission, ability and availability of health care which together determine women's access to and utilization of health services (Chatterjee, 1983). Health seeking depends on the accessibility of the health care system, besides just having its availability. The latter is a function of the existing number of health care units and their competence. In India, effective area of coverage of an average primary health centre (PHC) is confined to a radius of three to four miles. But due to geographical and ecological conditions and relatively inaccessibility of tribal habitations, the mobile dispensaries and health centres are not be more purposeful than the static ones. The rules and procedures of indenting for medical supplies in the remote areas are very frustrating. Another problem in public health among



the Indian tribes concerns the shortage of medical personnel and qualified nurses in the face of continued belief in the old system of medicine and a steady but slow rising faith in the new system. A majority of men and women of the medical profession are very reluctant to offer their services in rural and tribal areas. We are still grappling with the problem of producing “a basic doctor” with enough managerial skills to adequately meet the laid down requirements.

Utilization of health care is less popular in rural areas unless it is easily accessible in terms of distance, time by means of transportation, stock of vaccine, language, knowledge and perfect communication between the patients and the doctor/health facilitator (Choi and Lee, 2006). People face a lot of stress there and due to lack of money they are not always able to afford such treatment even when required (Sinha, 1986).

Accessibility of health facility for a mother is viewed as an input into the production of child health following Gary Becker’s theory (1965) of time allocation. The learning by doing effect of assessing health care for her can confound learning by doing and tastes. There are at least two reasons for such a confounding relationship. One, a mother may have unobserved traits-tastes and attitudes and other unmeasured factors — that predispose demand for immunization (Strobino *et al.*, 1996). On the other hand, in India women’s mobility to outside home, autonomy regarding outside movement, decision making about external consultations and expenditure is restricted, because men control women's contact with the outside world (Randal, 1991; Becker *et al.*, 1993).

#### *Theoretical perspectives of accessibility and child immunization*

Several possible explanations for accessibility differences in child immunization have been put forward. They are as follows:

- A mother will be more likely to immunize her child if accessibility of health services is found by her. Analysis that does not incorporate this confounding effect will have biased estimates of the causal effect of her health care behaviour on child immunization.
- Mothers who participated in health care programmes may receive counselling about the importance of immunization programmes. They may also develop confidence about the value of modern medicine. And also they may develop a familiarity with

health care systems that increases the likelihood that they will rely on them again to the benefit of their children (Choi and Lee, 2006).

- Due to lower levels of literacy and traditional social norms, tribes normally do not accept any new positive intervention in their lifestyle in general. On the other hand, connectivity and economic compulsion do not allow them to make use of a modern health facility. The doctor or medical staffs in the government health centres is available during a stipulated working time and most of medicines are not available in adequate quantities. As a result they have developed a negative attitude towards the government medical care.
- Quality of care, waiting time, presence of health care provider, cost of treatment and distance of facility play a significant role in health seeking.

In summary, from the above comprehensive review of literature in developed and developing countries, it may be observed that a large number of studies have examined the relationship between childhood immunization and relevant select explanatory variables. However, most of the analysis that has been made so far was on the role of socio-economic and demographic factors associated with childhood immunization. Only few attempts have been made so far to analyse the factors influencing the childhood immunization coverage among social groups and no study has been made with reference to the effects of social determinants and their interactions with program factors in Empowered Action Group (EAG) states of India. The present study tries to fill the gap in analysing the role of social group affiliation the childhood immunization in the select EAG states taking into consideration social determinants. Moreover, much of the research done on this was based on small, non-representative samples. Clearly, there is a need for further research based on large and representative samples with multivariate analytical methods to estimate effects while controlling potentially confounding variables by holding them constant, to inform programme managers and policy makers on the potential effects of social group affiliation and program factors on immunization coverage in the less developed areas of India. Therefore, this piece of research work would like to explore these research gaps, and the details of the study and methods adopted to achieve the objectives of the study are discussed in Chapter - III.