

Chapter VI

Trend analysis

This chapter compares the status of autonomy on safe motherhood care in two time periods. In the previous chapter influence of autonomy on safe motherhood are described. In the present analysis trend is considered as a pattern of gradual change in the process of autonomy and its influence on safe motherhood in two different time points. Analysis has been done in two parts. In the first part, it is shown in the form of tables with differences for both autonomy and safe motherhood and in the 2nd part the difference of percentage is shown through linear regression analysis.

The main objective of this analysis is to see the changes in the areas of safe motherhood care with respect to women autonomy considering direct and indirect factors. The change may be positive or negative or stagnant with respect to time.

To find out the changes of differences in terms of percentage, values of safe motherhood and autonomy related direct and indirect variables of '1998-99' time period value has first been subtracted from the corresponding value of '2005-06' time period for each variable, and then this value was divided by the value of '1998-99' period and followed by multiplication with 100. This was done for each state, for each safe motherhood care and for autonomy related direct and indirect (socio-economic) variables. Positive sign means change is going on for betterment. Negative indicates that change is lower in the recent

period than the earlier one and the '0' value means no change is observed in between the two time periods.

It may be argued that the changes in the safe motherhood pattern may be determined by changes in regional levels of autonomy and the socio-economic characteristics rather than their levels at a point of time especially for those state/s where the improvements were much more than other states. To examine this hypothesis, the influence of status of autonomy on the temporal change of safe motherhood, linear regression analysis has been carried out. Linear regression analysis is done to see the relationship between dependent (Safe motherhood component i.e. antenatal visit, delivery place, tetanus taken, post natal care) and independent (decision making authority as direct factor and socioeconomic variable as indirect) factors.

State-wise percentage differences of Safe motherhood care between two time periods, such as antenatal visit, tetanus vaccine, delivery place and postnatal care, have been considered separately for the dependent variables. Dependent variables are taken as binary i.e. 1 and 0. For complete case i.e. at least 3 antenatal visit, at least two tetanus vaccine, institutional delivery and post natal check up within 2 months of delivery is considered as complete case and it was given a value of 1 and for others it was 0. Some selective autonomy related direct and indirect variables are considered as independent variables. Autonomy related factors are considered as direct factors, which may directly lead to adopting Safe motherhood care and socioeconomic variables are considered as indirect factors which may indirectly affect in taking such care. Decisions are classified as binary high or not high groups. There are two types of economic decisions like

participation in large household purchase and access to money. The classifications into two groups have been made after combining the two types of decisions. The details are discussed in methodology chapter. Thus, for economic decision, two groups are formed, one is high and other is not high group. The household and reproductive decisions are grouped in a similar manner. For regression analysis, differences of high groups of each state for all the decisions are considered. For indirect variables (socioeconomic), differences have been taken in terms of urban residence, higher educated women, female headed household, husband with higher education, women occupation with professional/service category, high household status level (taken as a proxy of household economic position), husband with service category as determining variables. It is important to note that differences of two time periods have been considered in respect to 26 states only, which are common to both the periods. Levels of significance of $p = .01$, $.05$ and 0.1 have been considered. The results are shown in the forms of Figures and Tables.

Differences in taking safe motherhood care are shown in the figures 6.1-6.4. It is seen from the figures that a positive trend in safe motherhood care is found almost all the states except for Mizoram, Nagaland (high difference), Goa, Gujarat, Bihar, for antenatal visit, Karnataka, Punjab, Tamil Nadu for Tetanus vaccine, mainly Mizoram, Nagaland for institutional delivery and Kerala, Goa, Tripura and Assam for Post natal check up. It is also observed that for safe motherhood, a negative trend is mainly found among the North East States. The poor infrastructural facilities may be the reason. A large difference is quite surprising especially in case of antenatal visit where Mizoram and Nagaland shows

noticeable negative trend. The reason may be that in Mizoram, roads are very tough and may create risk for the pregnant women. Published report shows that in these two states, antenatal visit is very low in the Govt. dispensaries or centers, therefore health workers or family welfare workers are posted to visit the households. For the state of Nagaland, though the state has considerable number of health institutions, outreach services are inadequate because many institutions have no doctors and the supportive staffs not staying at the place where they are posted. Similar trend is also observed in case of institutional deliveries for the state of Mizoram and Nagaland. It is also noticed that differences in the percentages of taking 2 or more doses tetanus are very low in both the periods, which may be due to poor execution of Government policies and programs. Trend, when seen through post natal care, it is found that the states like Assam and Tripura, the percentages were already very low in taking post natal care in the period 1998-99 and more surprisingly percentages are reduced in the period 2005-06. The other two states are overall in better position so far as post natal care is concerned. For negative trend in Tripura is the insurgency problem during that period. In Assam, one of the reasons about 80 percent of the population resides in rural areas and the people of these rural and remote localities have a traditional customs of pregnancy care which continues to persist till now.

Fig-6.1 Trend in complete antenatal visit in the states of India

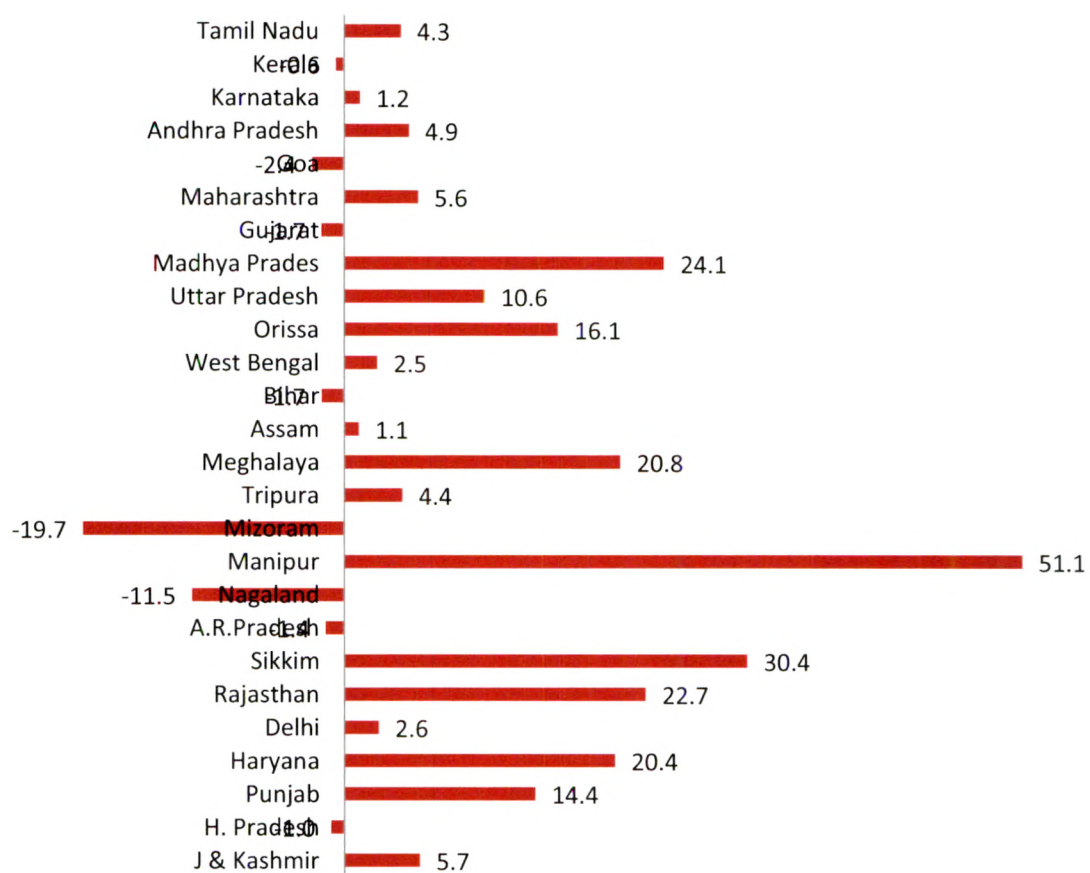


Fig 6. 2 Trend in taking complete tetanus vaccine in the states of India

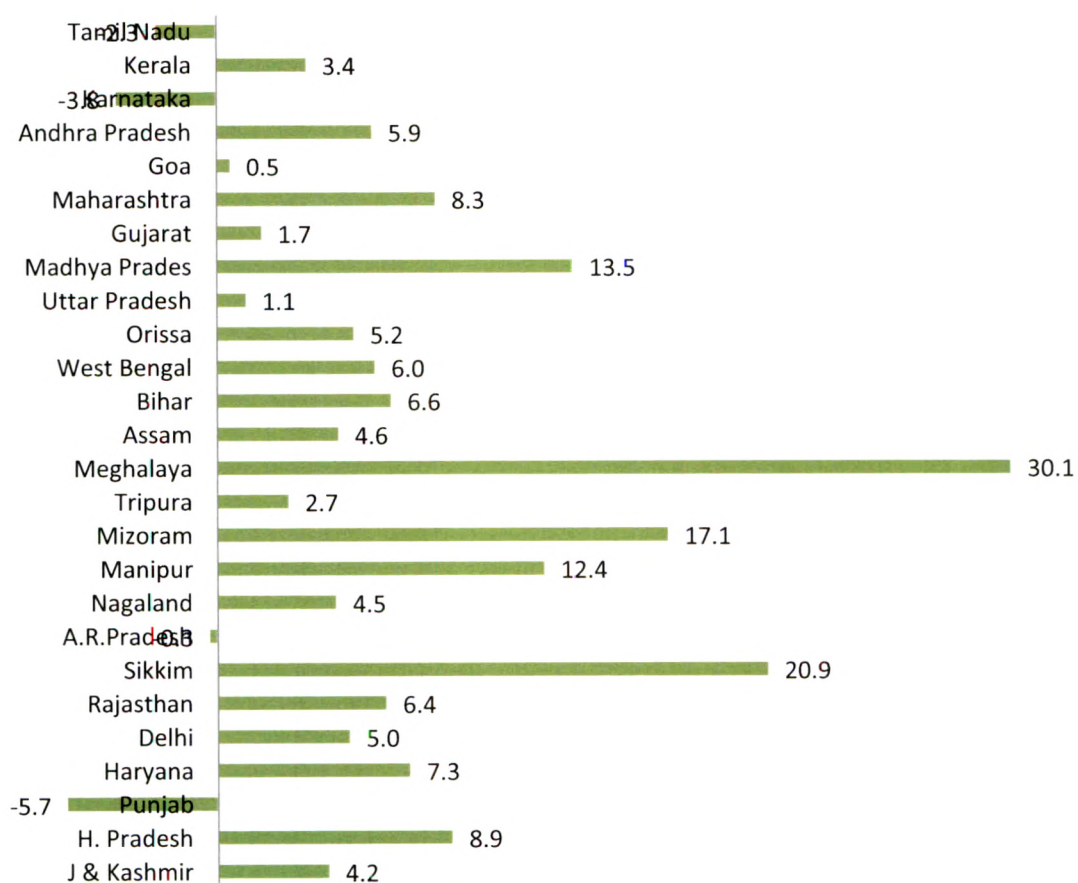


Fig 6.3 Trend in Institutional delivery in the states of India

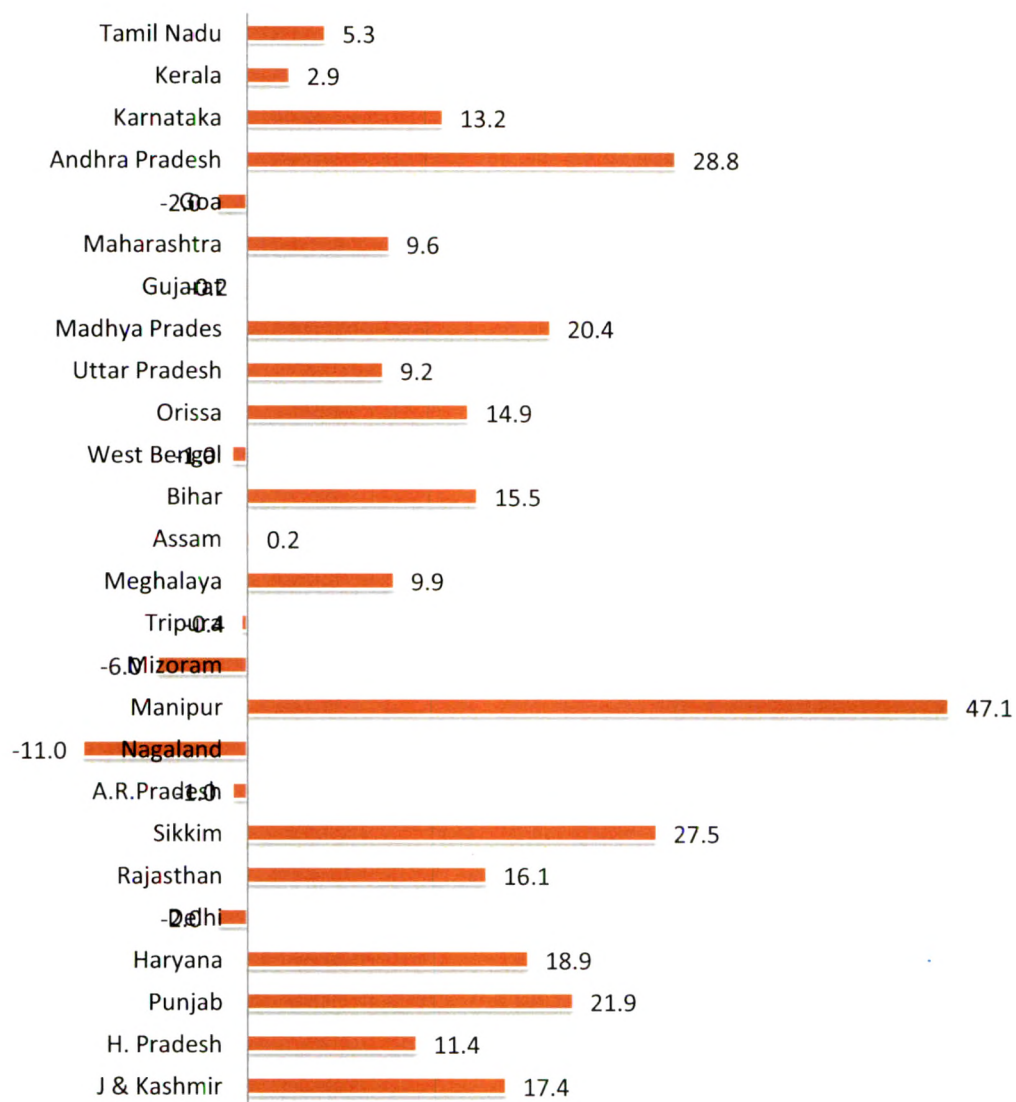
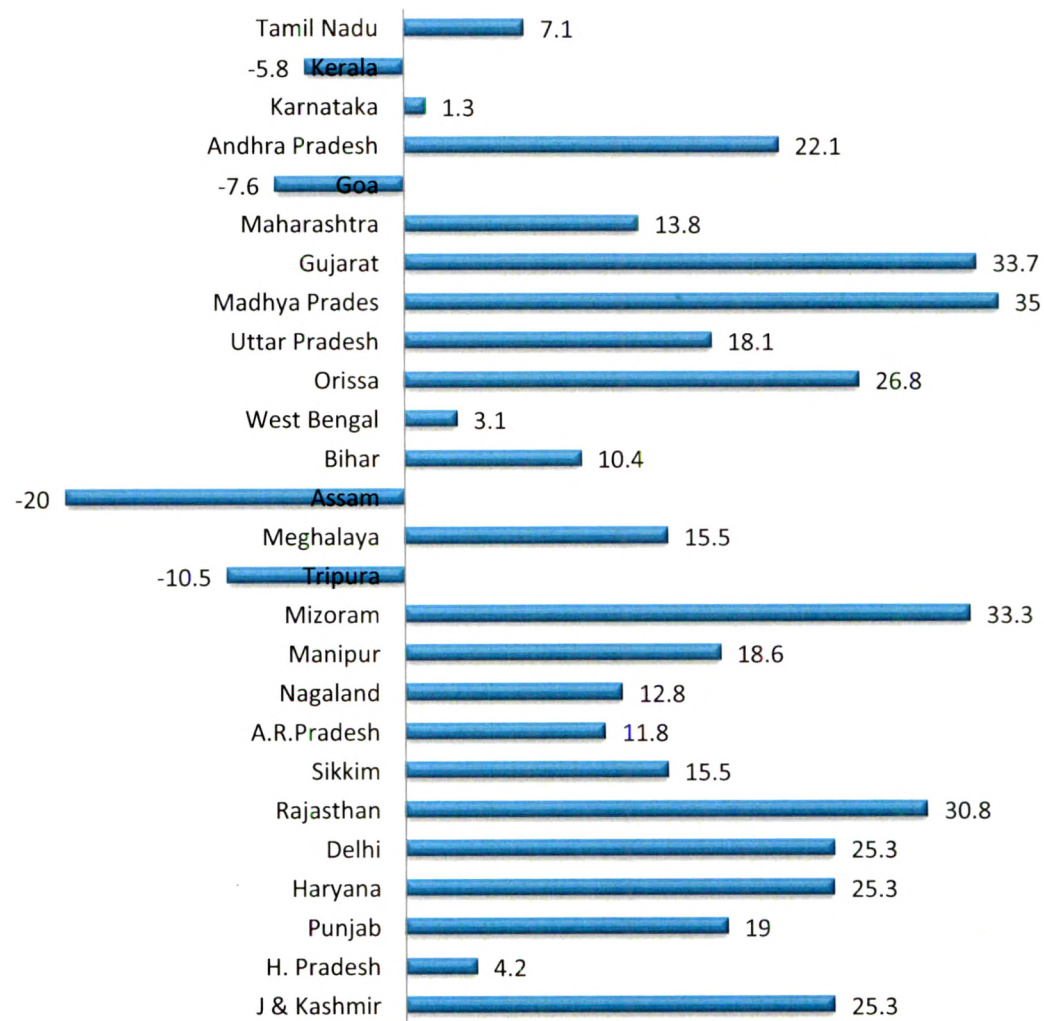


Fig 6.4 Trend in postnatal check up in the states of India



Trend in the decisions as found by taking percentage differences are shown in the figure 6.5-6.10. Exclusive positive trends are observed for Family Planning (FP) use and mobility to friends/relatives house. The trends of other dimensions of autonomy are seen to be positive with some minor exceptions. It is noticed that women access to money has positive trend in all the states except for Tamil Nadu, Haryana, Mizoram, Meghalaya and Arunachal Pradesh and for large household purchases negative trends are noticed in Meghalaya and Tripura. For decisions on health care negative trends are found in the states of Gujarat and Punjab only. For the case of going to market independently, a negative trend has been observed only in Punjab.

Fig 6.5 Trend in money access in the states of India

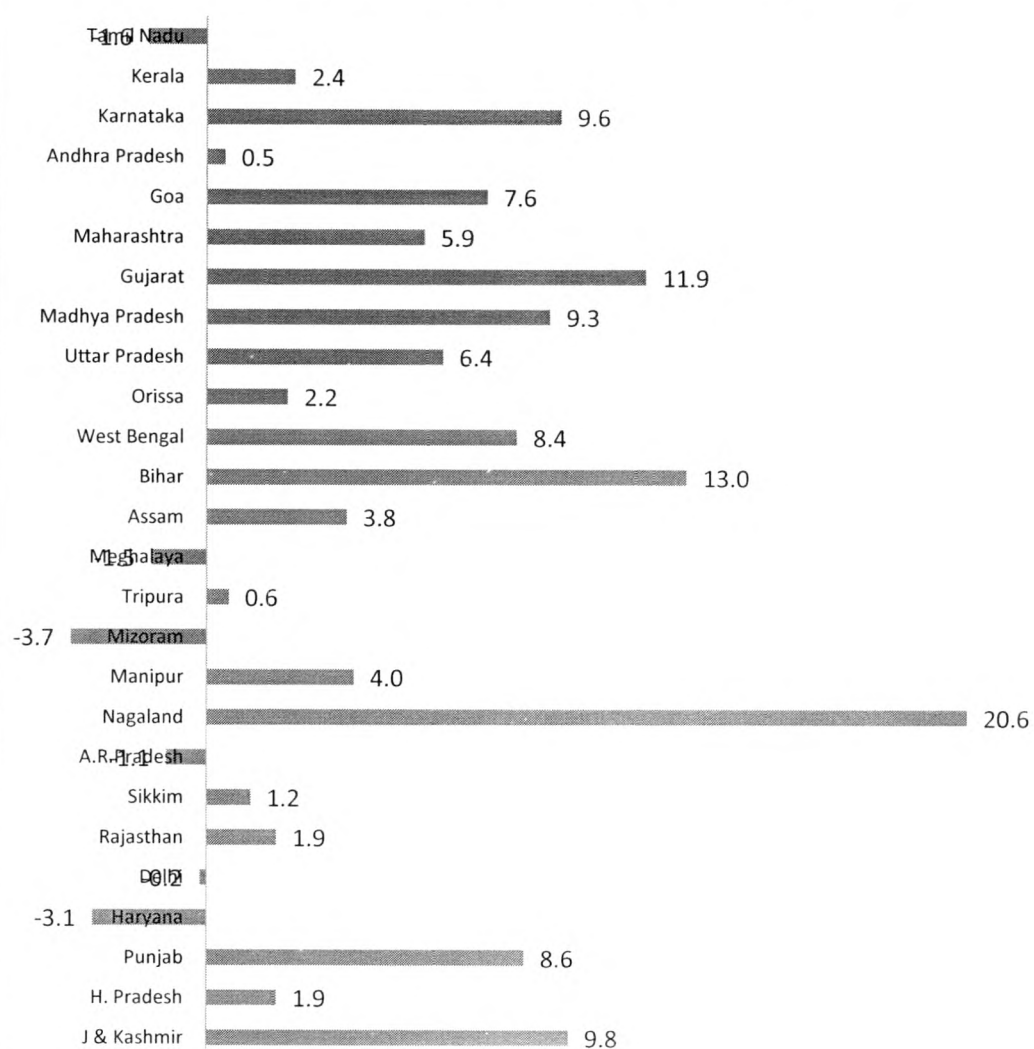


Fig 6.6 Trend in participation on large household purchase in the states of India

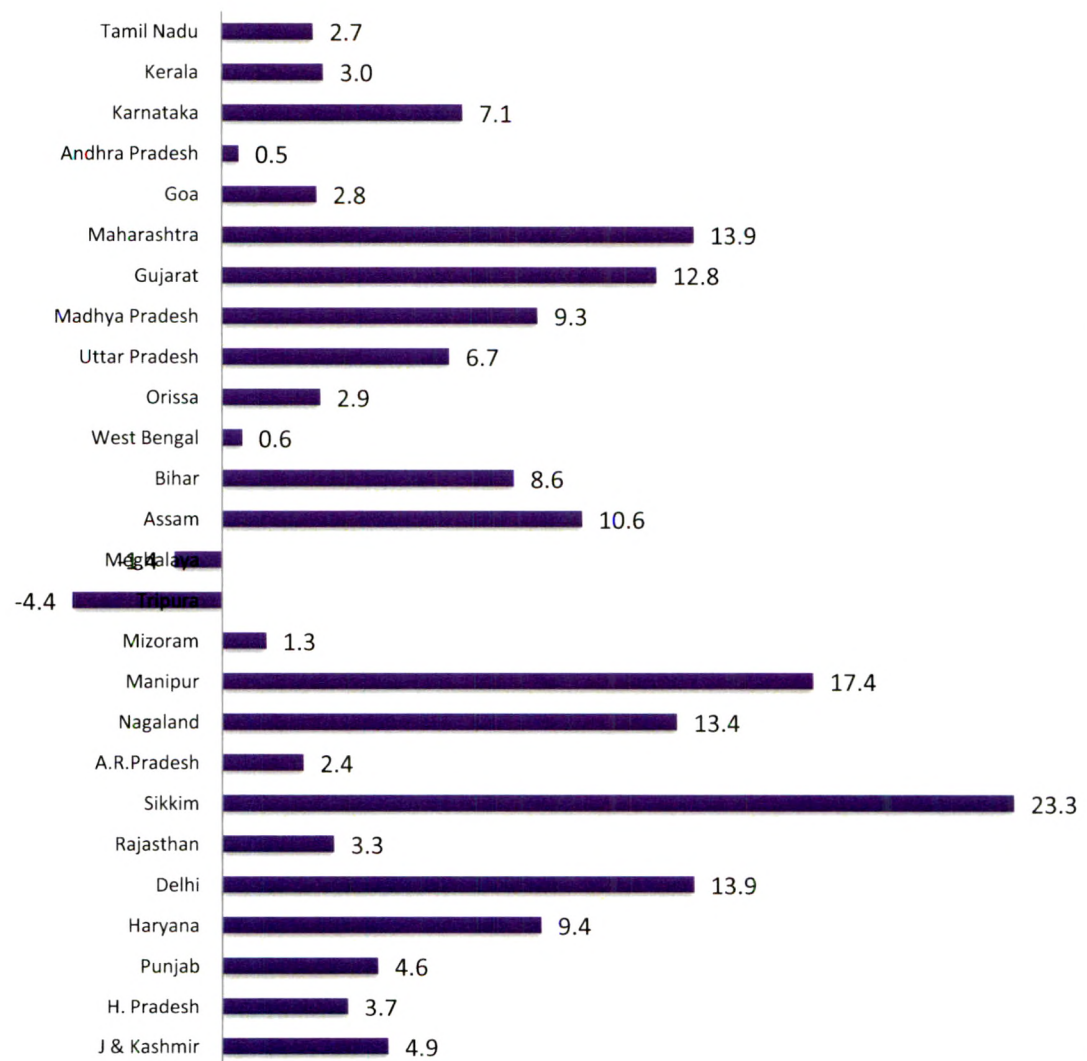


Fig 6.7 Trend on own health care in the states of India

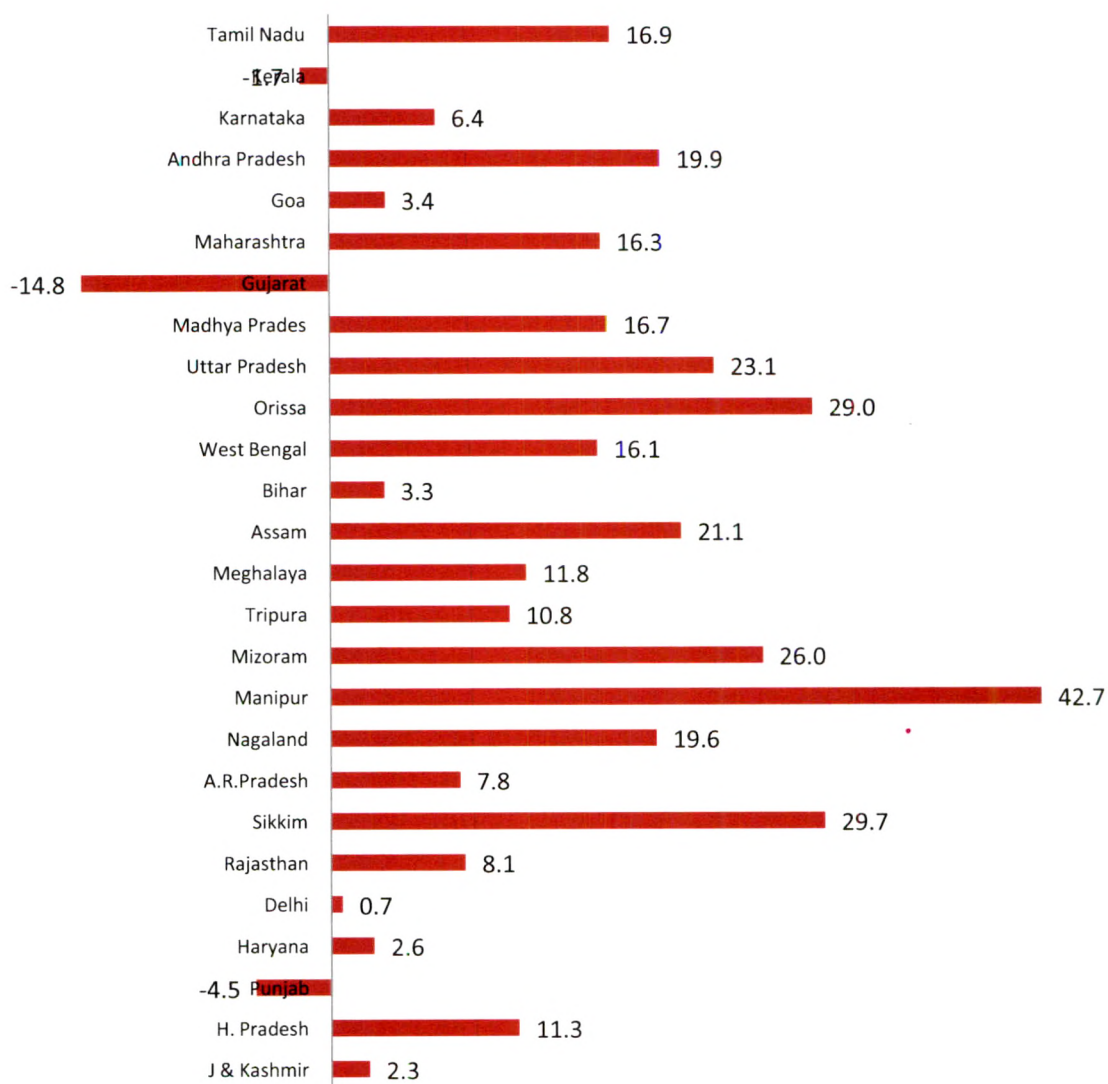


Fig 6.8 Trend of going to market independently in the states of India

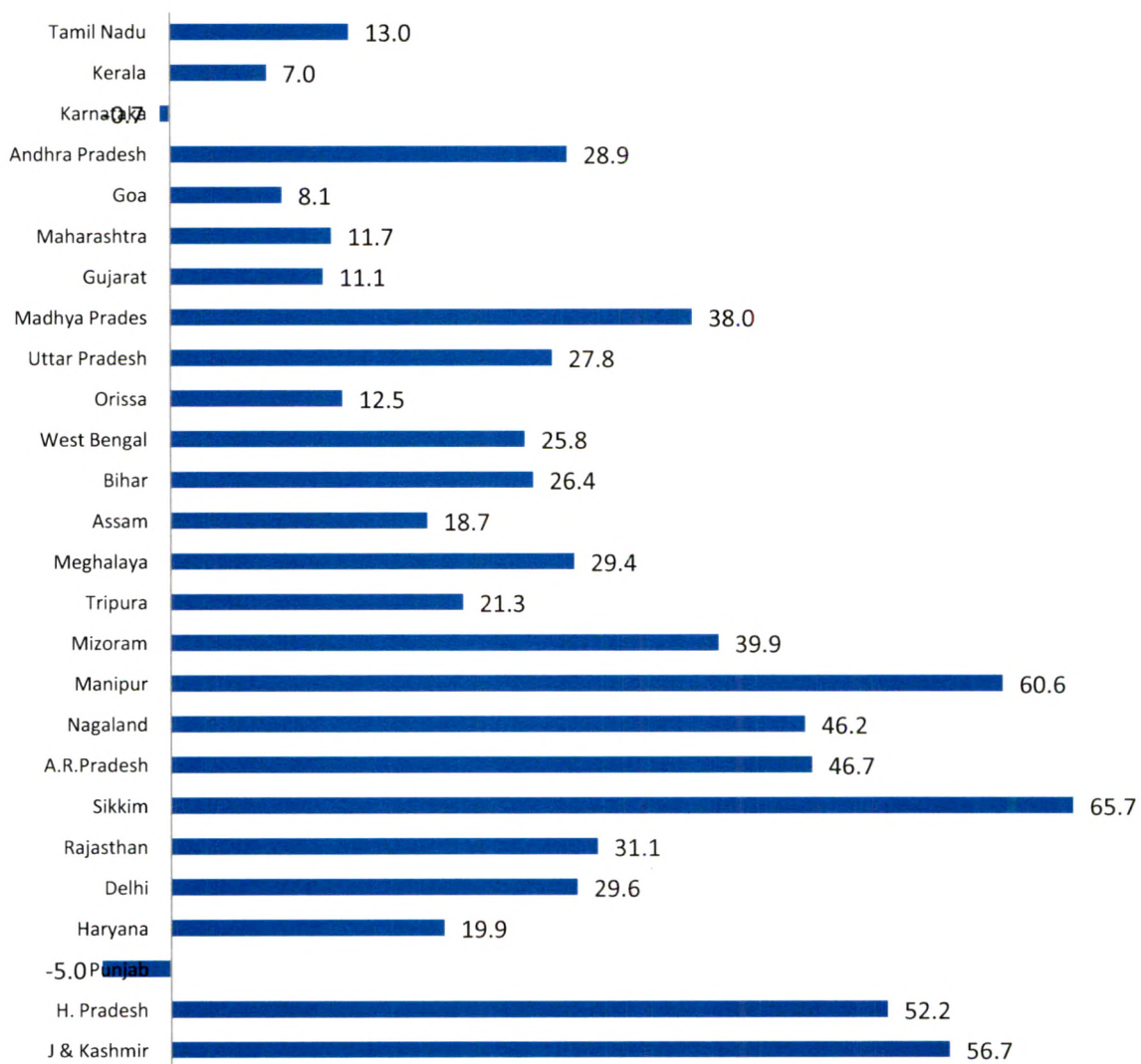


Fig 6.9 Trend of free mobility to visit friend/relative's house in the states of India

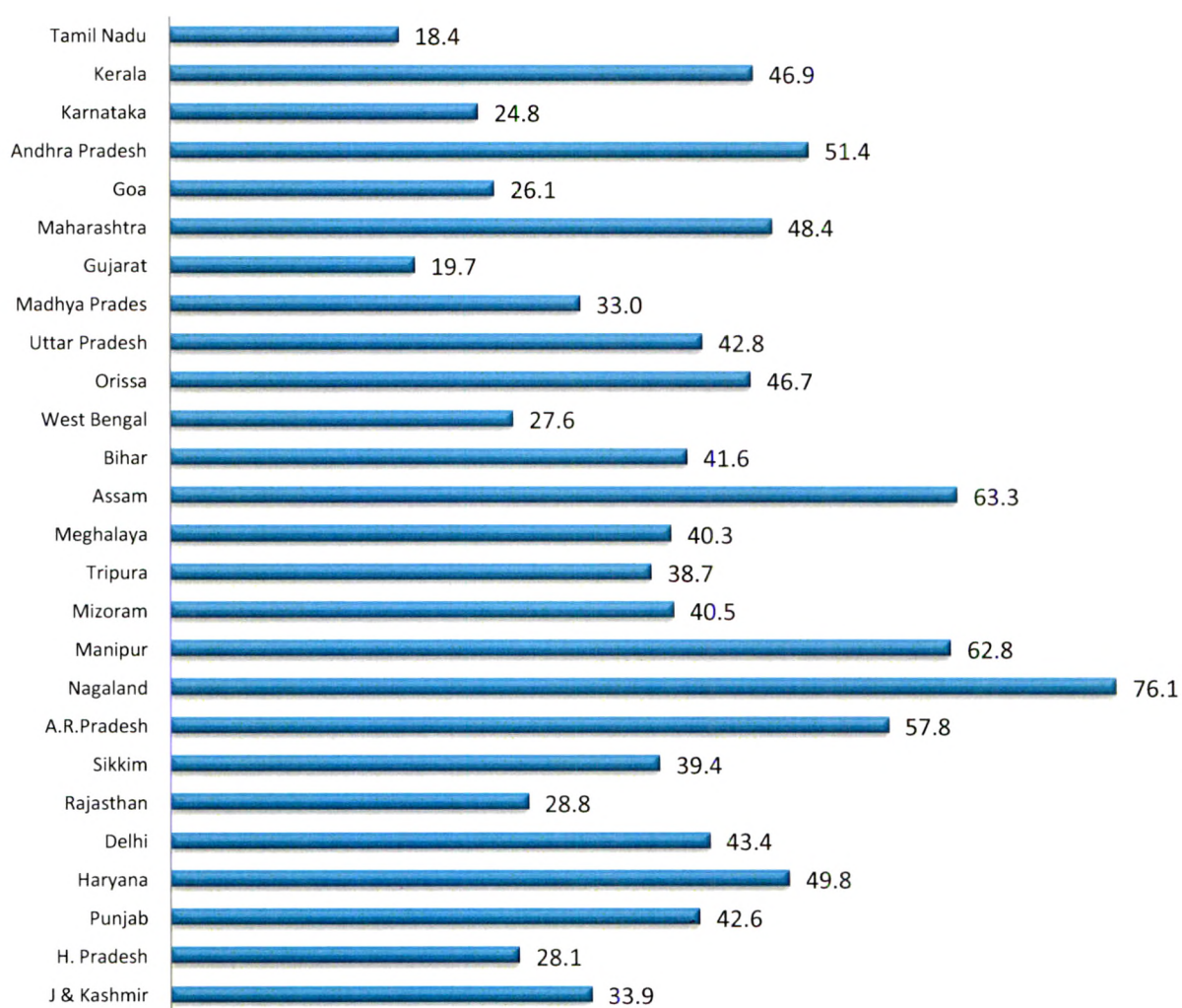
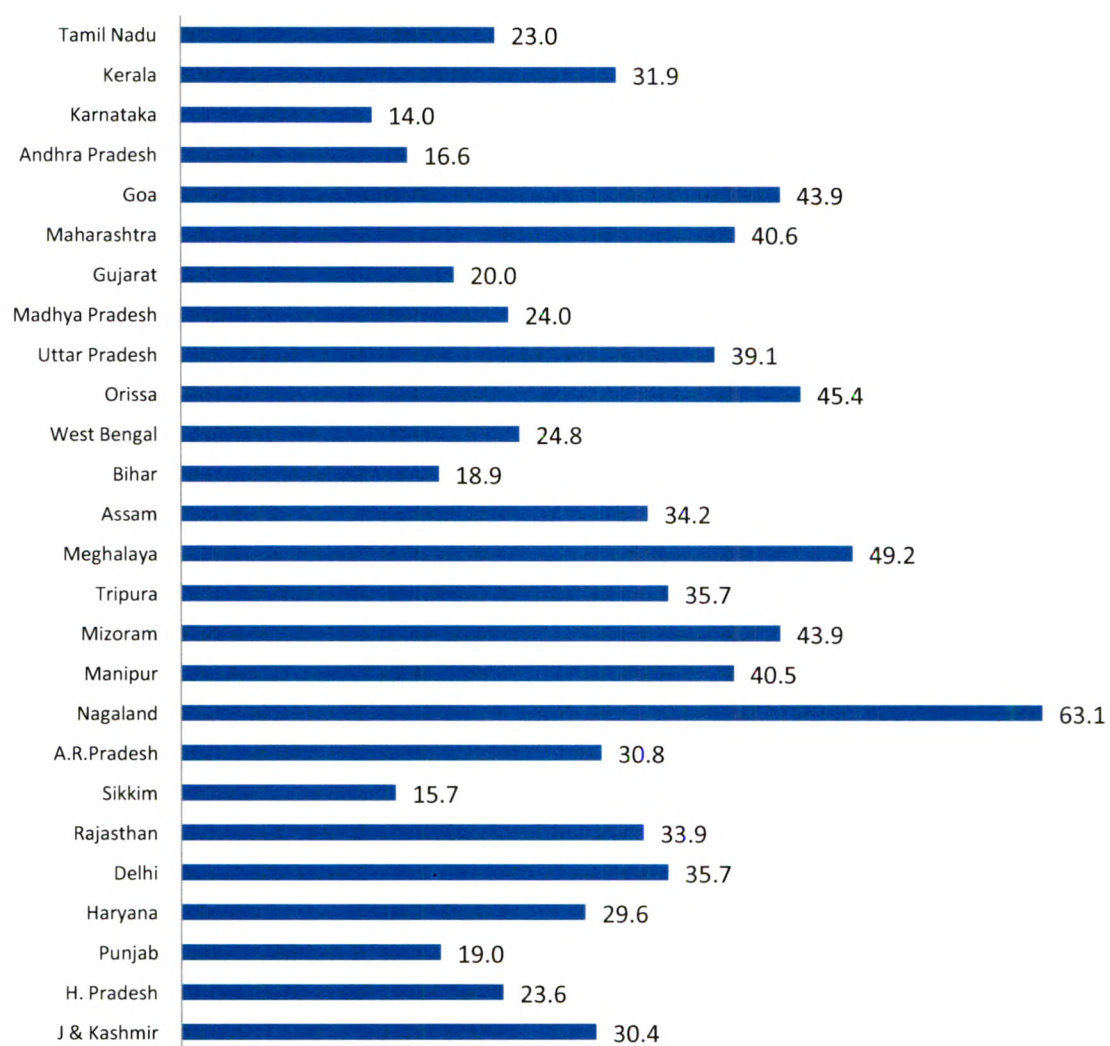


Fig 6.10 Trend in the decision of FP use in the states of India



To see the relationships among the variables, regression analysis is very useful. The regression results are shown in Tables 6.1-6.3. They depict the impact of changes of direct (autonomy related) and indirect (socioeconomic) factors on the changes in the Safe motherhood care for the women in India. To see the impact of changes, linear regression analysis is done separately for direct variables only or indirect variables only or jointly for direct and indirect variables. In the Table 6.1, regression is shown with respect to autonomy related factors. This table describes the role of autonomy on safe motherhood care with respect to temporal trend in the states of India. It is found from the table, that except for high economic and household decision group, no clear temporal trend is observed among the women of higher decision holder in reproductive area in the states of India. It is found that women of higher household decision holder have a significant effect on institutional delivery or for antenatal visit. It is seen in the earlier chapter that women's independent mobility has a positive effect on safe motherhood care. For trend, the difference of percentage of safe motherhood on difference of percentage of decision making authority also shows significant positive relation in the states of India, as independent mobility helps in taking outside care. It is also observed that women of high economic decision takers have a significant influence over antenatal visit or institutional delivery or post natal care. As safe motherhood needs some money, therefore it is an indication that more economic autonomy leads to money oriented safe motherhood care with respect to trend in the states of India.

Table: 6.1 Results of linear regression of difference of percentages of safe motherhood on difference of percentages of
Decision-making over the two successive NFHSs in India

Dependent variables→ Independent variables ↓	Difference of percentage of safe motherhood component in the states of India							
	Institutional delivery		Complete tetanus		Complete antenatal visit		Post natal check up	
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Intercept	17.486	.456	21.622	.087	10.039	.989	27.622	.505
High Household decision-making index women (diff %)	.029	.022**	-.009	.632	.027	.018**	.006	.845
High Reproductive decision-making index women (diff %)	.075	.124*	.013	.632	.039	.384	.040	.726
High Economic decision-making index women (diff %)	.192	.020**	-.066	.171	.134	.033**	.353	.066*
R ²	.205		.033		.262		.086	

***: Significant at 1 % level. **: Significant at 5 % level. *: Significant at 10 % level.

Trend analysis, when seen through independent socioeconomic variables with respect to dependent safe motherhood factors (Table 6.2), shows that education play a significant role in each of the SM care. Household economic position also plays a significant role where money is concerned. Residence pattern does not show any significance except for post natal care. It is also observed that change is significant among the female headed households with the changes in post natal check up. There is no prominent significance in the area of Husband's higher education or service category with respect to safe motherhood care. Therefore, temporal trend is very clear with respect to education and household economic position on safe motherhood care for each state. A combined regression with direct and indirect factors on the change of safe motherhood is shown in table 6.3. It shows that, apart from the significance level of education, household economic position in the context of indirect factors and higher economic decision in the context of direct factors, a positive significant trend is observed among the women of high reproductive decision taker. The analysis shows that significant trend is found among the women of higher reproductive decision taker with that of institutional delivery. It is a good sign where women are coming out from the old values and protect themselves from the reproductive health hazards by securing institutional delivery care. The analysis helps us to understand that role of indirect factors like education and household economic position has more influences than direct ones like decision making ability.

Table: 6. 2 Results of linear regression of difference of percentages of safe motherhood on difference of percentages of socio-economic groups over the two successive NFHSs in India

Independent variables ↓	Difference of percentages of safe motherhood component in the states of India									
	Institutional delivery		Complete tetanus		Complete antenatal visit		Post natal check			
	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value
Intercept	-7.220	.364	-.663	.896	-9.480	.351	-17.207	.481		
Urban (diff of %)	.000	.998	.070	.254	-.009	.942	-.629	.039**		
Female household head (diff of %)	.095	.165	-.043	.323	.068	.428	.392	.068*		
Higher educated women (diff of %)	.915	.002***	.142	.398	1.139	.003***	2.757	.003***		
Prof. or service women (diff of %)	-.008	.856	-.012	.684	.025	.661	.276	.061*		
Higher educated husband (dif %)	.538	.265	.558	.081*	-.520	.395	-1.803	.228		
Prof. or service involved husband (diff. %)	.077	.738	.107	.473	-.418	.166	-.151	.832		
High household status Index family (diff. %)	.034	.051**	.015	.189	.034	.129*	.023	.656		
R ²	.840		.732		.604		.489			

***: Significant at 1 % level. **: Significant at 5 % level. *: Significant at 10 % level.

Table 6.3: Results of linear regression of difference of percentages of safe motherhood on difference of percentages of both direct and indirect proxies of autonomy over the two successive NFHSs in India

Independent variables ↓		Difference of percentage of safe motherhood component in the states of India									
Indirect factor		Institutional delivery		Complete tetanus		Complete antenatal visit		Post natal check up			
		coefficient	p-value	coefficient	p-value	coefficient	p-value	coefficient	p-value		
Intercept		-8.279	.480	4.700	.574	-19.080	.214	-20.260	.626		
Urban (diff of %)		.061	.555	.036	.627	.118	.381	-.781	.049**		
Higher educated women (diff of %)		.928	.012**	.188	.431	.644	.143*	3.264	.013**		
Prof. or service women (diff of %)		-.054	.356	-.004	.920	.041	.583	.213	.310		
Higher educated husband (diff %)		.626	.239	.495	.195	.115	.862	-2.377	.212		
Prof. or service involved husband (diff. %)		-.075	.744	.150	.369	-.438	.154	-.147	.858		
High household condition index family (diff. %)		.030	.093*	.017	.174	.022	.326	.041	.503		
Female household head (diff of %)		.075	.357	-.019	.735	-.081	.435	.438	.142*		
Direct factor											
Higher Household decision (diff %)		-.128	.223	.020	.780	-.128	.338	.246	.502		
Higher Reproductive decision (diff %)		.053	.110*	-.032	.176	.052	.213	-.050	.663		
Higher Economic decision (diff %)		-.050	.327	-.001	.983	.102	.131*	.064	.724		
R ²		0.889		0.770		0.721		0.524			

***Significant at 1 % level. **: Significant at 5 % level. *: Significant at 10 % level.

It is also noticed that temporal trend is much effective on the autonomy and safe motherhood differences because it is multi-indicative in nature, as it is the only evidence of past and present situation and future determinants for increase of autonomy and safe motherhood care which is also a millennium development goal of India, both for micro and macro level study. In India, states are diversified starting from health, education, economy to geographical barrier, cultural pattern and so on. Therefore, magnitude of the change is not same for all the states. In India comparative data from two national level study show that for safe motherhood, percentage difference of complete antenatal visit is 5.2 for overall India and for urban and rural it is -0.3 and 5.6 respectively. Similarly institutional delivery shows higher in recent study especially for rural areas and the difference are 7.9 for overall, 0.5 for urban and 8.0 for rural India. Therefore, it is observed that temporal change is mostly taken place in the rural areas which is positive as more than 70% of population lived in rural areas and without rural development a state or a country can not be progressed. In the similar way, it is also seen that changes in autonomy take place in India, mainly in rural areas. The present results show that in most cases safe motherhood care or autonomy is higher in the recent period which may be due to impact of different policies and programs taken in the states to reduce maternal mortality. The other explanation may be that there has been an increase of general awareness or that there has been overall economic development as an effect of globalization. Result of regression analysis confirms the basic findings.

6.1 Salient features of the chapter:

- 1) Trend analysis is considered as a pattern of change in the process of autonomy and its influence on safe motherhood.
- 2) Positive trend in safe motherhood is found in all most all the states except for Goa, Gujarat, Bihar, Mizoram, Nagaland (antenatal visit), Karnataka, Punjab, Tamil Nadu (Tetanus), Mizoram, Nagaland (Institutional delivery) and Kerala, Goa, Tripura and Assam (Post natal check up).
- 3) A negative trend is observed among the North East states.
- 4) For decision, exclusive positive trend is seen in case of FP use and mobility to friend/relative house.
- 5) The trend of other dimensions of autonomy is seen positive with the exception in access to money (Tamil Nadu, Haryana, Mizoram, Meghalaya and Arunachal Pradesh), large household purchase (Meghalaya and Tripura) for economic decision.
- 6) For domestic decision, only negative trend in case of own health care is seen in Gujarat and Punjab.
- 7) Some states show a good record of safe motherhood care or women autonomy and shows more than 80% in taking care. Such states are Tamil Nadu, Kerala, Maharashtra, Goa and Gujarat.
- 8) The states that show high percentage in autonomy or safe motherhood in both the period, temporal change sometimes may negative with very small difference, may be due to higher achieving level.

- 9) Linear regression confirms the positive significant trend in the use of safe motherhood care with that of higher economic decision when the analysis is done decisions only.
- 10) Women having higher domestic autonomy also show a significant temporal trend with that of safe motherhood care like institutional delivery and for complete antenatal visit.
- 11) For reproductive decision, 10% level of significance is seen only for the institutional delivery.
- 12) Trend when seen through socioeconomic variables (indirect factors) over safe motherhood care in the states of India, regression analysis shows that women education is the only factor that can change a lot in taking safe motherhood care properly.
- 13) The trend, when seen combining both for direct and factors, shows that role of indirect factors has more influences than the direct factors in taking safe motherhood care.